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Railway Age

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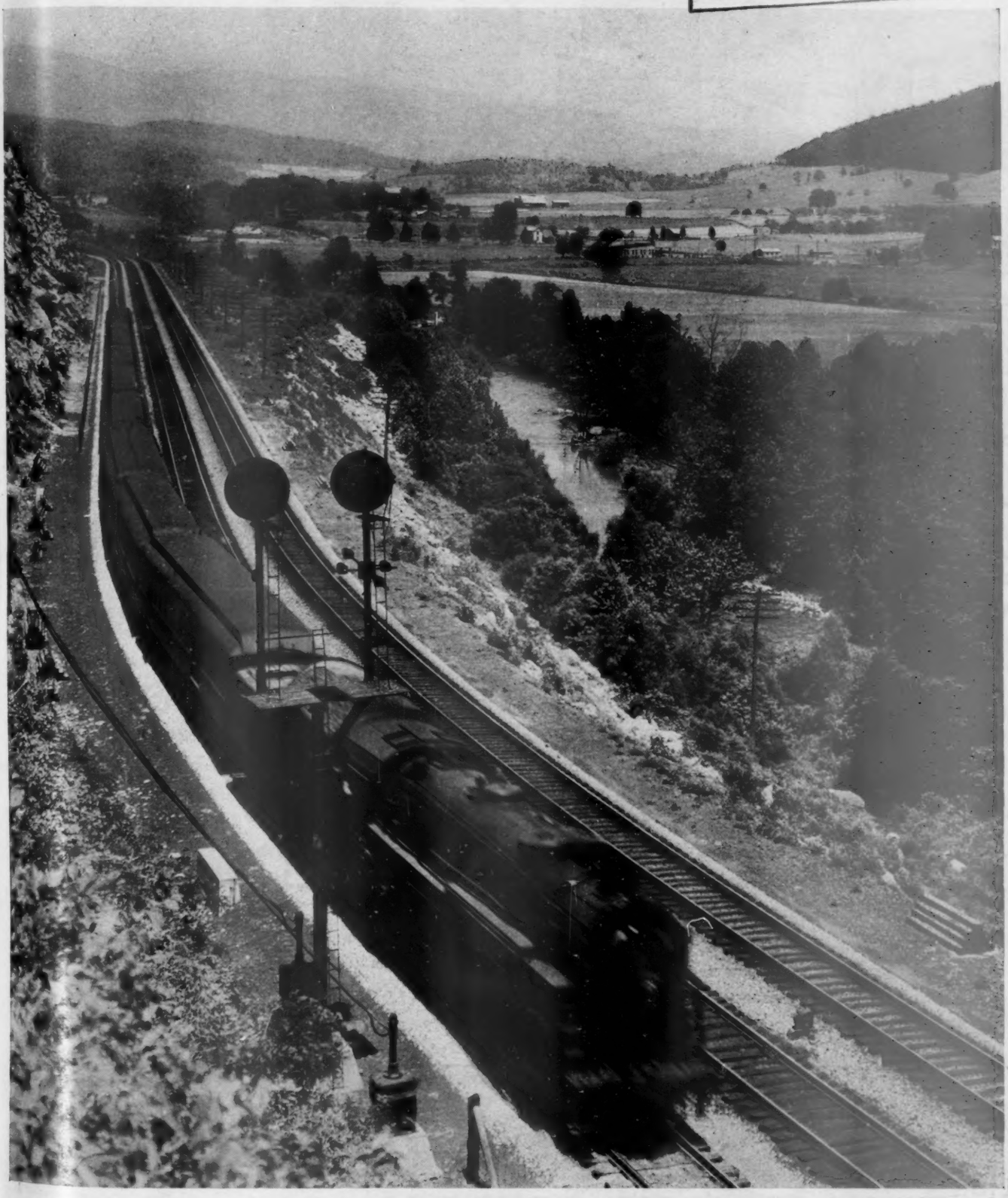

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WESTERN ASSOCIATION OF RAILWAY EXECUTIVES

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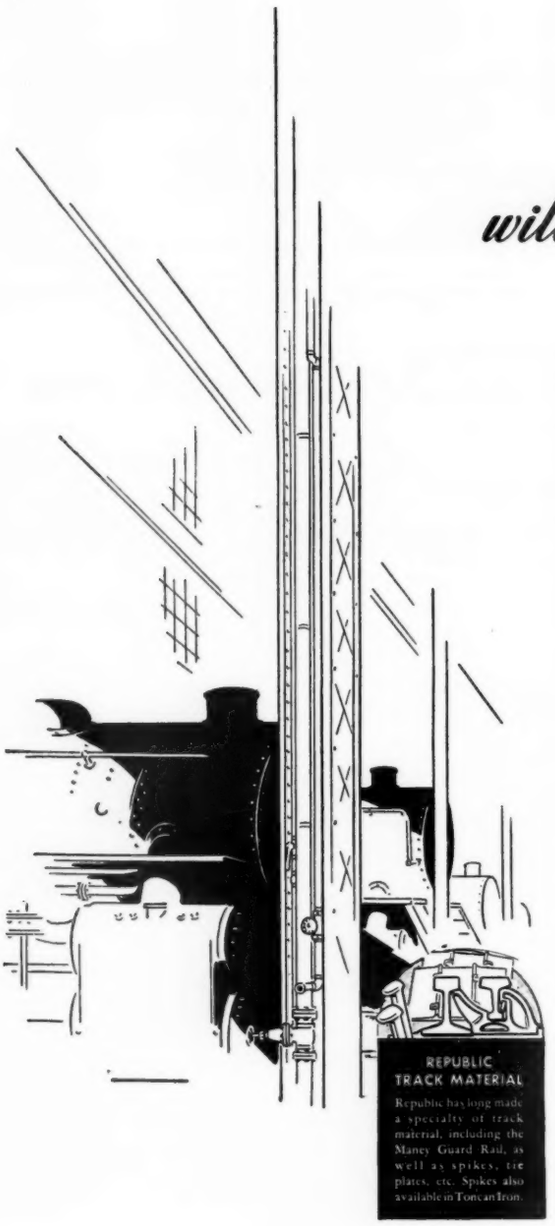

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RAILWAY AGE

Political Maneuvering And the Railroad Situation

The present railroad situation and the neglect of it in Washington strikingly illustrate that in a democratic country politics is regarded by most politicians as more important than economics, and that when they are confronted with political issues apparently involving their own future, and economic issues involving the future of the nation, most of them give complete priority to the political issues. There are now about 1,500,000 persons unemployed on the railways and in the durable goods industries because of the inadequacy of railway gross and net earnings. This is more than the total number of American soldiers that saw service in actual combat in the World War, but only one-seventh of the total number of persons now unemployed in the country; and yet consideration of transportation and all other measures that might promote recovery has been delayed for weeks by purely political maneuvering regarding veterans' bonus legislation.

Why Railroad Facts Are Important

The facts regarding the existing railroad situation are of vital importance for two reasons. One of these reasons is that from every standpoint the railroads are one of the nation's most important industries, and that there can be no full economic recovery without recovery of railroad earning, employing and buying power. The other reason is that railroad freight car loadings, the best measure of the total production and distribution of commodities, show that the acuteness of the present railroad situation is mainly due to the condition of general business. In the first four months of 1935 car loadings were about one per cent less than in the first four months of 1934 and 39.2 per cent less than in 1929. In the first three weeks of May they were 5 per cent less than in 1934 and 45 per cent less than in 1929. In consequence railway gross earnings were less than in the first five months of last year, while operating expenses were larger due to advances in wages and prices of materials and fuel, and net operating income substantially declined.

The politicians at Washington have been taking such an active hand in running business that they cannot escape a large responsibility for its condition and trend. Bad business never, in the long run, has been good politics. It occurs to this paper, therefore, that it might be better politics than they are now playing for many politicians to study the present trends of railway car loadings and earnings. They indicate that continued neglect of important economic problems may not prove good politics for those who, regardless of party, may ultimately be held largely responsible for failure to solve them.

Most Railroads Not Earning Fixed Charges

The net income (or deficit) earned by a railroad is the criterion by which its solvency must ultimately be gauged. If interest is not earned the road may draw on its reserves as long as they last to keep up interest payments. After that it may pledge such securities as it has for loans to pay interest. But these are temporary expedients, as everyone recognizes. There is no health in them. The only safe reliance for meeting interest is earnings. The continued failure of earnings to cover expenses will exhaust the resources of even the strongest companies. The railroads as a whole had a deficit after fixed charges of 139 millions in 1932, 6 millions in 1933 and 32 millions in 1934.

These aggregate figures for the railroads as a whole are not as significant as those for individual companies. It is not railroads in general which go into the hands of receivers, or which have to abandon lines, or upon which communities throughout the land depend for efficient and economical transportation service and tax revenues. Rather, it is individual railroad companies which have real existence, and provide transportation, employment and tax revenues. How are these individual companies faring? Reports filed with the Interstate Commerce Commission covering railroads operating 236,140 miles of line (or 98.9 per cent of the mileage of all Class I railroads) in the first quarter of 1935 show that companies operating 190,937 miles—or almost 81 per cent of the mileage—did not earn fixed charges. In other words, in the first three months of 1935, of every five miles of Class I railroad in the

United States, only one mile was earning enough to cover interest on its bonded indebtedness.

Deficit Larger Than in 1934

However, it is not a condition, however good or bad, at any one time which determines the future of an institution—but the trend. If conditions are bad, but getting better rapidly, then there is no reason for deep concern. If they show signs of further decline, that should be a cause for concern. Railroad revenues as a whole in the first quarter of this year were 4.2 per cent less than in the first quarter of 1934, while operating expenses were 1.9 greater. The result of this unfavorable trend on individual railroad companies was that 196,729 miles, or 83.3 per cent of the total, earned less net income than they did in the first quarter of 1934, or increased their deficits. Companies which earned net income in the first quarter of 1934 earned $37,541,645; in the first quarter of 1935 these same roads earned only $20,418,747—a decline of almost 46 per cent. Moreover the deficit suffered by the roads which operated at a deficit in the first quarter of 1934 totaled $52,745,601, and in the first three months of 1935 this red ink figure for those roads amounted to $65,940,949. In other words, what happened in the first quarter of the year was that the relatively prosperous roads lost 46 per cent of their prosperity, and the relatively poor roads saw their poverty increase by 25 per cent.

It is not, of course, necessary for a road to earn its bond interest in order to stay in operation. But it does have to earn its operating expenses and it does have to pay taxes. In the tables of revenues and expenses of the Class I roads for the first quarter of 1935, published in the *Railway Age* of May 18, these figures were given for roads operating 238,852 miles of line. Of this total 49,493 miles, or almost 21 per cent, had a deficit in net railway operating income—which means that they did not even earn operating expenses and taxes. Moreover companies with 10,451 miles of line —4.4 per cent of the total—did not even earn operating expenses during the period, and an additional 30,315 miles—12.7 per cent of the total—had an operating ratio between 90 and 100.

Transportation Legislation Neglected

Fortunately, reports of earnings for April which are now coming in show a more favorable trend, and it appears likely that that month may come more nearly equaling the results attained a year ago than was the case in the first three months of the current year. Be that as it may, it will be remembered that the result for the whole year's operations in 1934 was a large deficit; so that last year's performance must be considerably improved upon before the railway industry is in a healthy state in any sense of the word.

Meantime, with conditions as serious as they are in an industry the revival of which is indispensable to general economic recovery, Congress is still delaying action on legislation urged by the Co-ordinator, the Interstate Commerce Commission and every other impartial authority on transportation which would go far to improve the extremely depressed state of the railroad industry. There is no indication that it is ready to call a halt to the huge subsidies to railway competitors represented by the gigantic appropriations for highways and waterways. Regulation of railway competitors, it may be hoped, will soon be provided for—but the subsidies will still exist.

What Railway Managements Can Do

Therefore, while advancing the understanding of sound economics as applied to transportation all they can, the railroads will need to exercise all the ingenuity of which they are capable to reduce expenses and to attract traffic despite the handicap of competing with the public purse.

In general, there exists an urgent need to seek out and adopt any policy or program which will decrease expenses and thus improve railroad credit and consequently the ability of the roads to spend money for locomotives, cars and other facilities of a kind which have proved their efficacy in attracting traffic or reducing operating expenses. The Reconstruction Finance Corporation has a considerable sum of money which it can lend for new equipment. There are many railroads upon which modern locomotives and cars would effect savings sufficient to amortise equipment loans and leave a substantial residue for other creditors —or, in a few rare cases, for the stockholders. The possibilities for such loans ought to be fully explored, not only in the railroads' immediate selfish interest, but because expenditures of this kind, being demonstrably remunerative, would promote "an expanding recovery spreading from one industry to another."

Co-ordination of terminals and other facilities ought to be carried out wherever it promises substantial economies. When legal obstacles bar the way, then at least an attempt should be made to remove them—by appeal to the courts if necessary. Some railroads, notably in New England, demonstrated at least in a partial manner the possibilities of large savings in consolidation of terminals before the Emergency Transportation Act put an end to such effort. If experience with these be a criterion, then this expedient could with profit be widely extended, provided the legal obstacles to it can be removed.

L.c.l. Pooling Promises Savings, Traffic Impetus

The adoption by the Association of American Railroads of the "frozen per diem" plan gives heartening evidence of the growth of a co-operative spirit among the carriers. That there exists in inter-carrier co-operation a field the cultivation of which promises rich returns cannot be doubted. Certainly the pooling of l.c.l. traffic in the hands of the Railway Express Agency, or possibly dividing the business among several such "overhead" organizations, is a goal which should be sought without any unnecessary delay. Even though the Co-ordinator's report and recommendations

regarding the handling of merchandise traffic may have overestimated the economies of pooling, nevertheless the contrast between the average load per l.c.l. car (3.63 tons) and that obtained by the Express Agency (7.95 tons) and the forwarders (14.5 tons) speaks for itself. There exists a colossal waste in light loading of l.c.l. which pooling would reduce.

If the savings from pooling should prove to be only a fraction of those estimated by the Co-ordinator's Section of Transportation Service, they would still be important in the present state of railroad finances. Furthermore, such savings would provide a reservoir to permit the making of further "truck competitive" rates, which should enable the carriers to retrieve a great deal of traffic. There is justice in the present level of freight rates, but no one, we believe, will contend that it ought not to be brought down nearer the general price level just as rapidly as additional traffic or improved economy of operation permit. L.c.l. pooling offers, possibly, the best opportunity which exists on the railroads today for making some of the rate concessions which shippers desire—and making such concessions in a manner which should increase, rather than reduce, railway earnings.

Collective Bargaining Re-established

The pension decision of the Supreme Court, if its implications are intelligently pursued, ought to bring a new era in labor relations on the railroads. It ought, in short, to restore collective bargaining. This last is supposedly the goal of organized labor, but it has not been so on the railroads. Instead of presenting their demands to railway managements and seeking to achieve their ends by orderly negotiations, the labor unions have, to an increasing degree, ignored the machinery provided in the Railway Labor Act and have sought by their political power to have their wishes made into law without any weighing whatever of their merits. Except for the pension decision, collective bargaining might soon have disappeared altogether on the railroads. If the labor organizations have to discuss the concessions they wish with railroad managements, perhaps they may develop a better understanding of some of the problems the railroads are faced with and may come to see wherein they can—to their own advantage—aid in their solution. A prosperous railroad industry can and will do far more for railroad labor than an insolvent industry can do.

The change in point of view necessary to enable the railroads to meet their new competitive status is occurring rapidly. The co-operative advertising of the Western railroads, the experiments with collection and delivery service, the startling renaissance of "fan" interest in the railroads and its deliberate cultivation by railroad managements, the novel and promising new passenger equipment and speeds, the adoption of the "frozen per diem" plan—all these developments show to what degree we are in the midst of a revolution in railroading. The like of it has not been seen since the period following the civil war when the perfection of the steel rail and improved equipment design combined with the development of scientific rate-making to bring about a tremendous reduction in operating expenses and an even greater increase in traffic.

"Making the Socialists Keep Honest Books"

One of the minor victories that business has managed to achieve in Washington is the Senate's amendment of Senator Norris' Tennessee Valley Authority bill so as to require that the TVA keep its books in the same way required of public utilities by the Bureau of Internal Revenue.

It is often easy for socialist utilities to pretend they operate at a low cost, when the truth is that they are taking advantage of tax exemption and other privileges. If their books are kept in such a manner as to reveal their hidden costs, the people will have a better chance of perceiving the truth behind the extravagant claims of the socialist bureaucrats, whose real aim is government ownership of all the public utilities in the country.—From an editorial in Business Week, May 25, 1935.

We sympathize entirely with the point of view expressed in the above by our contemporary. In fact, we go farther. We should like to see honest bookkeeping enforced not only in enterprises owned and operated entirely by the government, but also those conducted in large part at government expense, such as highway and waterway transportation.

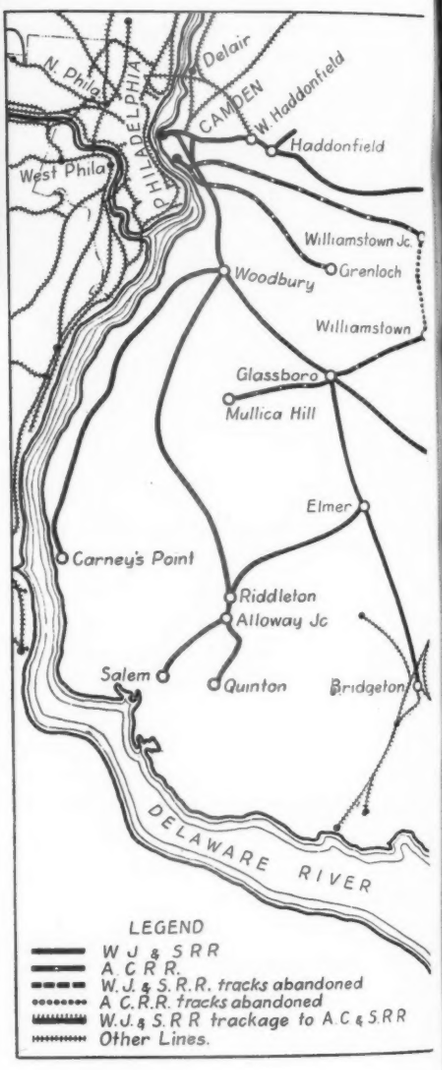
As a matter of fact, in its final analysis, the transport competitive situation, with all its complexities, is nothing more nor less than a case of dishonest bookkeeping. Users of improved waterways pay nothing toward the expense of the costly facilities they use; hence their rates do not reflect the full costs of their service. Similarly the fees levied for commercial use of the highways in most states bear little or no relation to the cost of the highways and the proportion fairly assignable to commercial users.

By all means let us have honest bookkeeping when the government goes into the power business. But if those who make this demand are really concerned with a principle, and not merely the protection of a selfish interest, we submit that they will find a much more flagrant case of dishonest bookkeeping in the failure of the government to charge anything for the water transportation facilities it provides. A dam is built to provide transportation and power. Maybe the power is sold below cost, but anyhow something is charged for it. But the transportation facility created at the same time is given away absolutely free. If the cost of providing waterways were added to that of operating vessels upon them, we should then have a true measure of the economy of water transportation. We do not have it now—and yet the federal government proceeds merrily to spend hundreds of millions of dollars to develop a form of transportation paralleling a more economical form already in existence.

Pennsylvania and Reading Complete U

Many physical changes and signals—

Above—Looking Over the Enlarged and Improved Federal Street Passenger Terminal at Camden, N. J.



At the Right—Map Showing the Original Lines of the West Jersey & Seashore, and of the Atlantic City Railroad, and also the Sections of Lines Abandoned in Unification Project

WITH the completion of the new Pennsylvania-Reading Seashore lines passenger terminal at Atlantic City, N. J., on February 11, the unification of the Southern New Jersey lines of the Pennsylvania and the Reading, undertaken in June, 1933, was completed. In a little more than a year and a half, the high-speed lines of these roads in South Jersey, with a total of 952.2 miles of tracks, each formerly with its own separate operating facilities, personnel, and practices of long standing, have been consolidated into one physical railroad plant, designed to provide the inland communities and seashore resorts of South Jersey with an economically practical and adequate transportation service.

In this unification of facilities, there were unusual benefits to be derived, and, at the same time, problems of large proportions to be met and overcome. In it, 84.10 miles of tracks have been abandoned and removed, which resulted in the eliminating of 194 public and 47 private grade crossings. Extensive new track facilities and connections have been built. Five signal and interlocking plants of major size, one with 111 levers, have been constructed and, in addition, the Federal Street passenger terminal at Camden, N. J., was rearranged and enlarged, and a new union passenger terminal has been constructed at Atlantic City.

As striking as the extent and character of the work which has been done in bringing about this unified system, is the speed with which it was accomplished, and the fact that throughout all of the work, trains were operated on a highly satisfactory schedule and handled a considerably increased traffic. Evidence in this latter regard is seen in the fact that nearly 3,000,000 passengers used the service of the unified lines during the summer of 1934, which is an increase of approximately 500,000 over the number handled during the corresponding season of 1933.

Extent of Lines Unified

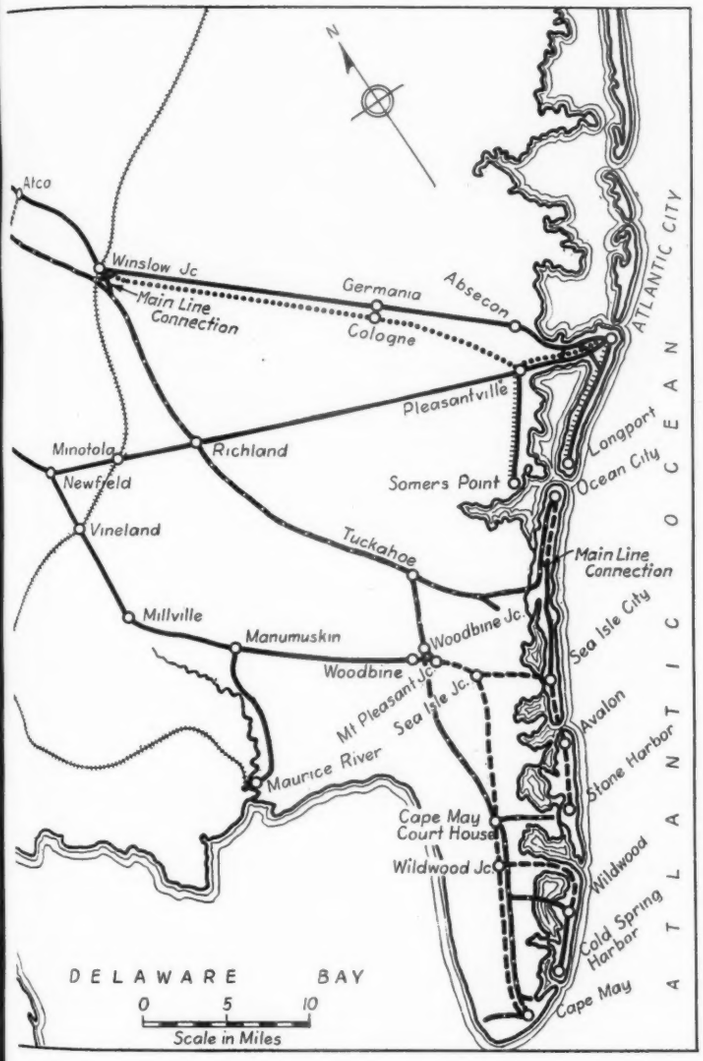
Prior to the formation of the Pennsylvania-Reading Seashore lines, there were two principal roads serving South Jersey, with its many inland communities and such important seashore resorts as Atlantic City, Ocean City, Cape May, Wildwood, etc., each of the roads having its main inland terminal at Camden, N. J., across the Delaware river from Philadelphia, Pa. These roads were the Atlantic City Railroad, owned almost entirely by the Reading, although operated separately, and the West Jersey & Seashore Railroad, controlled and operated by the Pennsylvania under a 999-year lease.

The lines of the Atlantic City Railroad, which in this article will be referred to largely as the Atlantic, including two short-line roads under its control in South Jersey, comprised 172.3 miles of road and 334.1 miles of tracks. The main line extended from the Kaighn's Point terminal in Camden, southeast through Winslow Junction, N. J., to Atlantic City, a distance of 55.2 miles. Its most important branches included the Gloucester branch, from Camden to Grenloch, 11.8 miles; the Williamstown branch, from Atco to Mullica Hill, 22.5 miles; the Cape May branch, from Winslow Junction

* This is the first of two articles. The second, dealing largely with the new passenger terminal constructed at Atlantic City, will appear in a subsequent issue.

Unification of South Jersey Facilities*

made in properties, involving stations, tracks Many grade crossings eliminated



to Cape May, 54.2 miles, and the Ocean City branch, from Tuckahoe on the Cape May branch to Ocean City, a distance of 14.2 miles.

The Central Railroad of New Jersey had trackage rights over the main line of the Atlantic between Winslow Junction and Atlantic City for the operation of through passenger trains between Jersey City, N. J., (on New York harbor) and Atlantic City. In addition, the Pennsylvania, as lessee of the West Jersey & Seashore, had trackage rights over the Atlantic's line from Winslow Junction to Woodbine Junction for the movement of passenger trains destined to Ocean City and other resorts on the West Jersey & Seashore south of Ocean City.

The West Jersey & Seashore, which will hereinafter be called the West Jersey, included 330.2 miles of line and 618.1 miles of tracks, with its main line extending from the Federal Street terminal at Camden, (owned by the United New Jersey Railroad and Canal Company) via Haddonfield and Winslow Junction, to Atlantic City, a distance of 58.4 miles. The principal branch lines of this road extended from Camden, via Newfield, to Cape May, 81.6 miles; from Newfield to Atlantic City, 34.6 miles; from Sea Isle Junction to Ocean City, 16.2 miles; from Sea Isle City to Stone Harbor, 8.6 miles; from Wildwood Junction to Cold Spring Harbor, 10.7 miles; from Absecon to Longport, 8.4 miles; from Pleasantville to Somers Point, 7.2 miles; from Woodbury to Carney's Point, 21.71 miles; from Glassboro to Bridgeton, 20.8 miles; from Elmer to Riddleton, 10.4 miles, from Manumuskin to Maurice River, 9.8 miles, and from Woodbury to Salem, 37.5 miles.

At West Haddonfield, the West Jersey had connection with the line of the Delaware River Railroad & Bridge Company (operated by the Pennsylvania under lease), by means of which part of its traffic was routed over the Delaware river to a connection with the Pennsylvania's New York-Philadelphia line, thereby providing all-rail service between Philadelphia, Pa., and points on its lines in South Jersey. At Delair, N. J., a point on the line of the Delaware River Railroad & Bridge Company, east of its crossing of the Delaware river, the West Jersey made connection with another line operated by the Pennsylvania along the east bank of the river, which provided direct service between New York City and points in South Jersey.

As seen in the foregoing and the accompanying map,

The New Atlantic City Passenger Terminal of the Pennsylvania-Reading Seashore Lines

the main lines of the Atlantic and the West Jersey extended principally from Camden to Atlantic City, through Winslow Junction. Between Camden and Winslow Junction, separate communities were served by the two railways, but between Winslow Junction and Germania, a distance of 16.9 miles on the West Jersey, and between Winslow Junction and Cologne, 16.9 miles on the Atlantic, the same municipalities, nine in number, were served by the two roads.

One of the main features of the consolidation, therefore, was the abandonment of the line of the Atlantic between Winslow Junction and Penred, the latter near Atlantic City, and the retention of the West Jersey line to a point where a connection could be made with the existing tracks of the Atlantic in Atlantic City. Another feature was the abandonment of the old separate passenger stations at Atlantic City, with many miles of supporting tracks, and the construction of a new modern union station. Other sections of the Atlantic which were abandoned include approximately five miles on the Williamstown branch, between Williamstown Junction and Williamstown; approximately 0.7 miles of line in the vicinity of and serving the road's Kaighn's Point passenger terminal in Camden; and about the same amount of line on its Gloucester branch; the total line abandonment aggregating 36.5 miles. On the other hand, the West Jersey abandoned about 47.6 miles of line, including approximately 22.8 miles at the southern end of its main line to Cape May; about 6.6 miles of its Wildwood branch; portions of its Ocean City branch amounting to about 9.7 miles; and its Stone Harbor branch, 8.5 miles long.

Owing to the overlapping service of the two roads, the abandonments effected have deprived only a few small communities of direct rail service, and, in each of these cases substitute bus service has been provided to afford adequate connection with points on the consolidated lines. On the other hand, the extensive elimination of grade crossings that resulted has been of much advantage to these communities, as well as to others all along the consolidated lines.

Atlantic Interlocking Tower at Atlantic City, and a View of the 111-Lever E.P. Interlocking Machine

Many Track Changes Necessary

Immediately following the approval of the unification plans by the Interstate Commerce Commission and the Board of Public Utility Commissioners of New Jersey, in June, 1933, the active work of consolidating the facilities of two lines was undertaken. The major construction and alteration projects included the enlargement of the Federal Street terminal of the West Jersey in Camden to accommodate all of the trains of the unified lines; the construction of 18 connecting tracks, either to join existing lines or to provide continued service to industries located on portions of the lines abandoned; the abandonment of many of the old signal and interlocking stations of the separate roads and the construction of five modern consolidated stations; and finally, the construction of the new union passenger station at Atlantic City, with an entirely new layout of platforms, service tracks and auxiliary facilities.

The Federal Street terminal at Camden was selected for the consolidated operation because of its ready adaptability to enlargement and more advantageous location for the use of the public. Prior to the consolidation, this terminal, with a headhouse and concourse area approximately 480 ft. long by 120 ft. wide, was served by 13 stub-end parallel passenger tracks, arranged either singly or in pairs, with low-level concrete platforms protected by butterfly-type sheds, serving the different tracks. In the enlargement of the terminal, the basic arrangement of the tracks was preserved, but the unloading length of the different tracks was practically doubled. In all cases, the concrete platforms and their sheds were extended in kind, the final length of the platforms being as much as 1,400 ft. in some cases. In addition, through the relocation of one of the existing tracks along the south side of the terminal and the construction of a new platform, an adjacent track, formerly without platform service was made available for passenger train service. In all, the capacity of the terminal was increased from approximately 140 cars to approximately 196 cars.

Along with these changes, the enlarged use of the terminal required the revision and enlargement of the coach yard immediately south of the station tracks. The old yard, with long ladder leads serving most of its 31 tracks, had capacity formerly for 232 cars, while the revised yard, in which many of the tracks were lengthened and the old ladder arrangement abandoned for a grouping of the tracks, largely in pairs, has a total capacity of 335 cars.

In addition to these track changes directly at the terminal, the five-track approach, extending almost a mile, was changed in alinement at several points and was provided with a number of new track connections, double-slip switches and crossovers to afford the greatest flexibility of train operation into and out of the terminal.

The most important connections built in bringing about the consolidation of the roads included several in the vicinity of South Camden to permit the trains of the Atlantic to reach the Federal Street terminal; a new connection between the roads at Winslow Junction, where the formerly separate lines have become one south to Penred; another connection between the lines at Penred; and still another directly at the approach to the new Atlantic City station. Other important connections between existing main lines were provided at

Looking West Over the Throat to the Federal Street Passenger Terminal at Camden, Showing the Type of Signals Adopted Generally on the Unified Lines

Ocean City and Wildwood, in both cases as the result of abandonments and unifying of service over one line.

Five Modern Interlockings Provided

In connection with the rearrangement and enlargement of track facilities, one of the most important phases of the work undertaken was that of consolidating the signal and interlocking facilities of the two roads. In this, some 25 separate plants, with a variety of types of interlocking machines, mostly antiquated, were consolidated into five new plants, equipped with the latest type of electro-pneumatic machines, illuminated track model boards and A-5 switch movements with point detectors.

The five new stations are designated as "Alan," directly at the Federal Street terminal in Camden; "Center," about 1.1 mi. east of the terminal on the main approach; "Brown," located in South Camden, tying the two roads together at that point; "Winslow," directly at Winslow Junction, where the unified lines come together and have connection with the Central Railroad of New Jersey; and "Atlantic," directly at the throat of the new station layout at Atlantic City.

Of these new stations, "Atlantic" is the largest, with an 111-lever machine controlling all switches west to Penred and east to the new Atlantic City station, a distance of 1.7 miles. The machine at this point has 41 switch levers, 3 additional switch levers controlling only electric locks on hand-thrown switches, 31 signal levers, 2 smash-board levers, 2 drawbridge lock levers, 5 check levers, and 27 spares. This machine, housed on the second floor of a two-story brick tower, replaced five former machines in the Atlantic City area, including a 76-lever mechanical machine of the Atlantic, and 52-lever, 36-lever, 24-lever, and 12-lever machines, all mechanical, on the West Jersey.

The new "Alan" interlocking at the Camden terminal has a 75-lever electro-pneumatic machine, with 32 switch levers, 25 signal levers, and 18 spares. This machine replaced an old 20-lever mechanical machine and two switch cabins. The "Center" interlocking, with a 63-lever electro-pneumatic machine, replaced old electro-pneumatic machines at three nearby points, with a combined total of 56 levers, and the "Brown" interlocking, with a new 35-lever electro-pneumatic machine, replaced an old 20-lever mechanical machine directly at Brown, and another 20-lever mechanical machine not far away. The Winslow interlocking, with a 27-lever electro-pneumatic machine, replaced a 12-lever mechanical machine on the West Jersey and a 42-lever combination electro-pneumatic and electro-mechanical machine on the Atlantic, in addition to another 6-lever machine on the latter road just west of Winslow Junction.

In addition to the abandonment of all of these old interlocking stations as the result of the construction of the five new modern stations, a number of other old stations were abandoned outright in connection with the line abandonments, one of these being the important interlocking of the Atlantic at its old Kaighn's Point terminal in Camden, which had a 76-lever electro-pneumatic machine.

Another important signal change, which was made within the same territory, was the replacement of the loop-type of automatic train control on the line of the Atlantic with the U. S. & S. continuous automatic four-indication cab signal system employed on the West Jersey. These changes permitted the interchange of equipment and unit operation on the two main lines from Camden to Winslow Junction, and thence to Atlantic City.

Highway Construction Forced Consolidation

There were many conditions favoring the consolidation of the railroads serving southern New Jersey. Possibly the more important of these were the increasingly uneconomical operation of the separate lines, and the large expenditures in prospect on both of the lines, if not unified, principally for grade crossing elimination projects and modern station facilities at Atlantic City.

One of the greatest problems which confronted the two railways serving south Jersey was the fact that in recent years extensive highway improvements have been made throughout this entire territory, to the extent that all points of any consequence on the two roads were

Alan Interlocking Tower at the Federal Street Terminal, Camden, N. J., and the 75-Lever E.P. Machine at that Point

reached by improved highways, usually hard surfaced, which paralleled the rail lines directy to Camden and Philadelphia. Concrete evidence of this growth of the highway systems is seen in the fact that whereas there were only 1,042 miles of hard-surfaced and improved highways in the territory served by the railroads in 1923, there were 1,953 miles of such roads in 1931. In addition, three new highway bridges were constructed across the Delaware river at or in the vicinity of Philadelphia, supplementing the numerous vehicle ferries accommodating highway traffic between Philadelphia and Camden, and South Jersey. At the time the unification of the lines was agreed upon, 62 bus lines and 123 trucking lines served the same communities served by the railways.

The effect of this highway competition was clearly reflected in the earnings of the railways. Passenger revenues of the Atlantic and the West Jersey, considered together, dropped steadily from $11,019,727 in 1925, the year before the Delaware River bridge between Philadelphia and Camden was opened, to $6,769,716 in 1929 and to $2,922,808 in 1932. Freight revenues increased from $6,502,890 in 1925 to $6,834,063 in 1929, but thereafter dropped steadily, totaling only $3,270,310 in 1932. In spite of efforts to reduce operating expenditures to a minimum on the separate roads, the decline in revenues continued faster than it was possible to decrease expenses. As a result, there was a net deficit in the combined earnings of the roads yearly from 1927, with the exception of 1929, the deficit reaching more than a million and a half dollars in 1932.

The depressed business conditions since the latter part of 1929 unquestionably had their effect upon the decreased traffic handled by the two roads, but the fact that highway and bridge construction, with the resultant increased use of automobiles and buses, was the major factor, is seen from the number of vehicles crossing the Delaware river between Philadelphia and Camden, which increased from 5,575,000 in 1925, to approximately 13,740,000 in 1932. Of all of this traffic crossing the river in 1932, approximately 78.6 per cent was handled over the new Delaware River bridge. Prior to July, 1926, when the Delaware River bridge was opened, the number of people who used the ferries of the two railroads in crossing the Delaware increased largely each year. For example, the 7,824,441 rail passengers who used the ferries in 1916, increased to 17,872,772 in 1920. In 1925, the year before the bridge was opened, the number of such passengers was 15,107,374, whereas in 1932 the number of rail passengers who used the two ferries was only 4,739,508; more than 3,000,000 less than the number in 1916, and nearly 11,000,000 below the total in 1925.

The unification of the physical properties and operations of the two roads in South Jersey, including the construction of the new passenger terminal at Atlantic City, which will be described in a subsequent issue, has been carried out under the direction of J. O. Hackenberg, general manager of the Pennsylvania-Reading Seashore Lines.

THIRTY THOUSAND "INVITATIONS" to vacationists to come to Virginia are being issued by the Norfolk & Western in the form of an illustrated 40-page book, describing the state's natural beauties, resorts and recreational facilities and climatic advantages. The publication, entitled "The Land of Romance—Virginia," is being distributed throughout the United States and foreign countries. The book carries more than one hundred realistic photographs and a two-page map in colors, with sketches illustrating the many points of interest along the railway.

Western Railways Merchandise Service

THE most extensive campaign ever undertaken to merchandise railway service is now being conducted by the western lines. It includes the use of advertising space in newspapers, farm papers, trade and general magazines and the radio to bring to the public the improvements that have been effected in railway service in recent months. In this program a total of 398 newspapers in 288 cities, 37 farm papers, 4 general weekly and 5 business magazines and 29 major radio stations are being used to carry the railroads' message throughout the West and to a lesser extent to eastern centers as well. The advertising, the first of which appeared during the week of April 15, and which will continue to June 15, has for its main theme the active program of air-conditioning passenger equipment in main line service on the western lines, with further emphasis on the economy of travel in the West where the basic rates have been reduced and the sleeping car surcharge eliminated.

Supplementing this advertising program and becoming a major part of the campaign of the western lines to popularize the railways and rail travel, plans are being formulated for Railroad Week, from June 10 to June 15, during which special efforts will be made to focus public interest on the improvements of railway service, both freight and passenger, which are offered by the western lines.

The Theme of the Advertising

To make the drive most effective, the appeal to persons living in the East is directed to summer travel in the West, while in advertisements intended for persons in the West emphasis is placed on all the advantages of rail travel, such as lower travel costs, time saving by train, dependability of schedules, comfort based on new and improved conveniences and the generally admitted high factor of safety, backed by the safety records made by western carriers. Emphasis is placed also on the wearing of white linen by men travelers as a demonstration that air-conditioning means something more than temperature, stressing the factor of cleanliness. There is further stressing of the lack of noise on air-conditioned trains as the natural accessory to sealed windows in all cars.

Newspapers' copy invites the public "to enjoy the finest travel service in the world at the lowest cost in the world," and amplifies the statement by calling attention to the fact that "today a train trip through the West is a land cruise deluxe. You have room to be comfortable when traveling on a train—room to walk around in—steadiness and light to read by—toilet facilities when you want them—the finest restaurant service in immaculate dining cars at prices that save you money. You save time. You travel steadily regardless of the weather. You rest as you ride. Insurance statistics prove that train travel is safest. You are safer on a train than in your own home. Travel by train to America's Rockies, Southwest, Mexico, California, San Diego Exposition, Texas Gulf Coast, Ozarks, North woods and lakes, dude ranches, national parks, Pacific Northwest, Alaska and resorts of every character."

Railroad Week

Under the plan for Railroad Week, governors and mayors in the West will issue proclamations designating

(*Continued on page 860*)

Seaboard Air Line Locomotives

Single-expansion, articulated locomotives of 2-6-6-4 type built by Baldwin for heavy fast-freight service

The Locomotive May Be Used in Heavy Passenger Service

FIVE single-expansion, articulated locomotives of the 2-6-6-4 type have recently been delivered by the Baldwin Locomotive Works to the Seaboard Air Line. These are unusual in that they are designed for high-speed handling of heavy freight trains, a class of service for which the articulated type has not heretofore been considered suitable in this country. Articulated locomotives of the Garratt type have, however, been successfully employed both in passenger and fast-freight service in some other countries.

The new Seaboard Air Line locomotives, which are known as Class R-1 and numbered 2500 to 2504, are already in fast-freight service on the Virginia-Carolina division between Richmond, Va., and Raleigh, N. C., a distance of 254 miles. In this service they are hauling about 50 per cent more tonnage than the 4-8-2 type locomotives which they have replaced. In anticipation of a possible employment in heavy passenger service should they be required, steam-heat and air-signal apparatus have been included in the equipment.

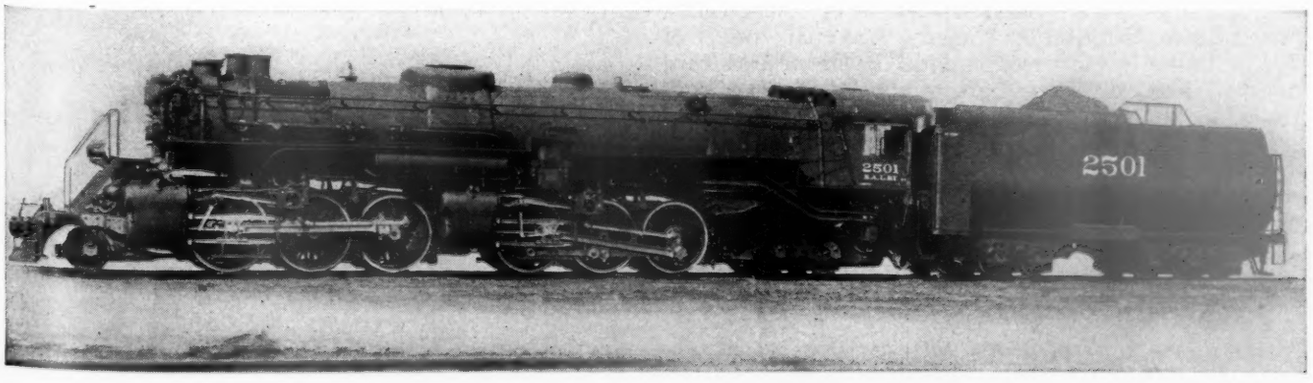
These locomotives have four 22-in. by 32-in. cylinders and 69-in. drivers. They weigh 480,000 lb., exclusive of the tender, of which amount 330,000 lb., or 68.8 per cent, is carried on the driving wheels. The tender, which carries 24 tons of coal and 16,000 gal. of water, weighs 301,300 lb., when loaded. With a boiler pressure of 230 lb. the rated tractive force is 82,300 lb., and the factor of adhesion, 4.01.

The Boiler

The conical type radial stayed boiler is designed for 230 lb. steam pressure. The shell is rolled in four courses, the first course having an outside diameter of 84 in. and the fourth course, 96 in. outside diameter. The dome is mounted on the third course. The total length of the boiler and the smokebox is 53 ft. 11⅜ in., the length of the smokebox, measuring from the front tube sheet, being 11 ft. The firebox is 144⅛ in. in length and 96¼ in. in width; the combustion chamber is 72 in. long. The depth from the crown sheet to the bottom of the cast-steel mud ring is 91 in. at the front and 71 in. at the back. This makes the crown sheet, which has a length of 16 ft. 1⅛ in., 6 in. higher at the front than at the back.

Two Nicholson Thermic syphons and two firebrick arch tubes are fitted in the firebox and one additional syphon in the combustion chamber. The plates for the boiler shell and firebox are of Lukens steel. The firebox and combustion chamber are of welded construction, the crown sheet and firebox side sheets being in three pieces. Flexible and hollow staybolts are of the Alco type. The grate area is 96.3 sq. ft., the grates being of the Firebar type. Coal is fed by a Standard Type BK stoker.

The shell is fitted with 44 tubes, 2¼ in. in diameter, and 200 flues, 3½ in. in diameter. The length over tube sheets is 24 ft. The total heating surface of the firebox is 515 sq. ft. and of the tubes and flues, 4,998



Seaboard Air Line Single-Expansion Articulated Locomotive for Fast Freight Service

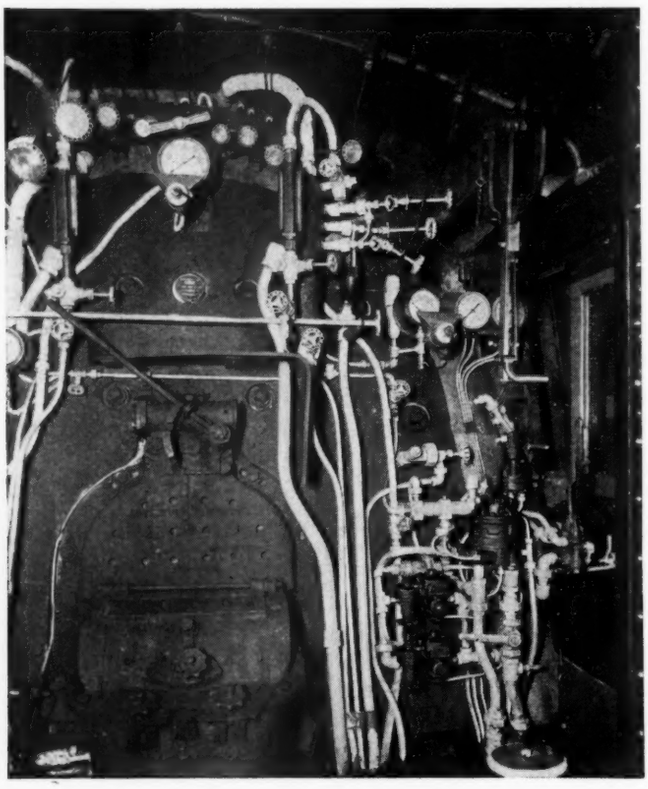
sq. ft. The Type E superheater has an area of 2,397 sq. ft. An American multiple throttle is a part of the superheater header.

Four of the locomotives are provided with Elesco feedwater heaters and one with a Worthington heater, Type 5-SA. Nathan non-lifting injectors, Special B, are provided for supplementary boiler feeding. Feedwater heater and injector check valves are both located on the left-hand side of the boiler.

Foundation and Driving Gear

The frames, which are of the built-up type with separate cradle, front bumper and intermediate braces, are General Steel Castings Hylastic cast steel. The two-wheel engine truck is of the outside bearing type and the four-wheel trailing truck is of the Delta type. The engine-truck has 33-in. wheels and the trailing truck, 43-in. wheels.

The four single-expansion cylinders, 22 in. diameter by 30 in. stroke, are of cast steel with Hunt-Spiller cylinder and valve chamber bushings. Packing rings and bull rings are also Hunt-Spiller. The piston valves are of 12 in. diameter and have a maximum travel of 7½ in. in the forward motion and 7 in. in the backward motion. The valve gears are of the Baker type, controlled by an Alco Type G power reverse gear.



View in Cab of Seaboard Air Line 2-6-6-4 Type Locomotive

To provide for high-speed service the driving wheels are of 69 in. diameter. This corresponds to a running speed of 41.08 m.p.h. for 1,000 ft. piston speed, or a piston speed of 243.5 ft. per min. when running at a speed of 10 m.p.h The axles are hollow-bored with 11-in. by 13-in. main journals and 10-in. by 13-in. journals on the other wheels.

Tender and Fittings

The tender is of a modified Vanderbilt type with a cast-steel water bottom. It has a capacity for 16,000 gal. of water and 24 tons of coal and weighs 301,300 lb. loaded. The trucks are of the six-wheel type, General Steel Castings design, with 33-in. rolled-steel wheels and 6-in. by 11-in. journals. A Unit drawbar and a Type E-2 radial buffer connect the engine and tender. Barco flexible pipe fittings are used in air lines between engine and tender and Auto-tite joints in the steam-heat connections at the front end of the locomotive and at the rear of the tender.

The operating brake is schedule 6-ET furnished by the New York Air Brake Company. There are two 8½-in. cross-compound air compressors mounted on the front of the smokebox which is carried on Okadee hinges. American foundation driver brakes are fitted, but no brakes are applied to the engine or trailer trucks. Sanders are Graham-White. Nathan rail washers are also provided. Nathan mechanical lubricators, type DV-6 of 26 pints capacity, are provided and also a two-feed hydrostatic lubricator.

Principal Dimensions and Weights of the Seaboard Air Line 2-6-6-4 Type Locomotives

Railroad	Seaboard Air Line
Builder	Baldwin Locomotive Works
Type of locomotive	2-6-6-4
Road class	R-1
Road numbers	2500-2504
Service	Fast Freight
Rated tractive force, 85 per cent	82,300 lb.
Height to top of stack	15 ft. 10 in.
Width	10 ft. 11 in.
Cylinders, diameter and stroke	4—22 in. by 30 in.
Valve gear, type	Baker
Valves, piston type, size	12 in.
Maximum travel	7½ in. F.; 7 in. B.
Weights in working order:	
On drivers	330,000 lb.
On front truck	40,000 lb.
On trailing truck	110,000 lb.
Total engine	480,000 lb.
Tender	301,300 lb.
Wheel bases:	
Driving	34 ft. 7 in.
Rigid	12 ft. 0 in.
Total engine	57 ft. 5 in.
Total engine and tender	97 ft. 9 in.
Wheels, diameter outside tires:	
Driving	69 in.
Front truck	33 in.
Trailing truck	43 in.
Boiler:	
Type	Conical
Steam pressure	230 lb.
Fuel	Coal
Diameter, first ring, outside	84 in.
Diameter, largest, outside	96 in.
Firebox, length and width	144⅛ in. by 96¼ in.
Height mud ring to crown sheet, back	71 in.
Height mud ring to crown sheet, front	91 in.
Combustion chamber length	72 in.
Thermic syphons	3
Arch tubes, number	2
Tubes, number and diameter	44—2¼ in.
Flues, number and diameter	200—3½ in.
Length over tube sheets	24 ft. 0 in.
Grate type	Firebar
Grate area	96.3 sq.ft.
Stoker	Standard BK
Heating surfaces:	
Firebox and comb. chamber	394 sq.ft.
Thermic syphons (3)	102 sq.ft.
Arch tubes (2)	19 sq.ft.
Firebox, total	515 sq.ft.
Tubes and flues	4,998 sq.ft.
Total evaporative	5,513 sq.ft.
Superheater (Type E)	2,398 sq.ft.
Comb. evaporative and superheat	7,910 sq.ft.
Feedwater heater	4 Elesco; 1 Worthington
Tender:	
Style	Circular, Water-bottom
Water capacity	16,000 gal.
Fuel capacity	24 tons

Railroads Oppose Canal Projects

Authorization legislation pending in Congress although allotments already made

WASHINGTON, D. C.

THE Senate commerce committee has been holding hearings for several days on the rivers and harbors bill, H. R. 6732, passed by the House on April 9, although the President's Advisory Committee on Allotments on May 16 recommended, and the President has since approved, allotment of $102,186,500 to 47 river and harbor projects, many of which are included in the bill. Railroad officers and others have appeared at the hearings in opposition to many of the most expensive projects, while others have appeared in support of them, in spite of the fact that the Army engineers take the position that the expenditures have already received sufficient authorization under the national industrial recovery act of 1933 and the emergency relief appropriation act of 1935 which provides for the $4,000,000,000 work-relief program.

The original bill included 204 projects, 77 of which are now under way with funds provided by the P. W. A. from emergency appropriations made in the 1933 act, and 127 of which had been recommended by the Chief of Engineers. The total estimated cost is $272,132,172, of which $58,067,499 had already been provided from funds of the P. W. A. Chairman Mansfield of the House rivers and harbors committee told the House that passage of the bill would preserve the legal status of the projects initiated under the emergency program and permit them to be maintained in the future from annual appropriations, authorizing for executive action as funds become available, "projects badly needed for the improvement of our national waterway system." Some of the work now under way with emergency appropriations, as well as some of that proposed, is not included in the bill on the ground that it had been authorized in previous rivers and harbors bills, although no specific appropriations had been made for completion.

New York Canal Project

One of the controversial features in the bill is a provision authorizing the expenditure of $5,000,000 for the first year as part of a proposed expenditure of $27,000,000 of federal funds for deepening, widening and otherwise improving the Oswego canal from Oswego, on Lake Ontario, to Three Rivers, and part of the New York Barge Canal from Three Rivers to Waterford on the Hudson river, a total of 185 miles. The rivers and harbors act of 1930 contained a provision authorizing the Secretary of War to accept from the state of New York the state-owned canals, under conditions which have not yet been complied with by the state, with a proviso that no project for the widening or deepening of these canals, or for the elevation of bridges in connection with them, shall proceed without subsequent authorization of Congress, and Senator Vandenburg, of Michigan, an advocate of the St. Lawrence waterway, has been insisting that the Committee on Allotments has probably violated the law in connection with this allotment. The railroads are interested, not only because of the increased competition proposed, but as taxpayers, because the expenditure of federal funds on the canal improvements will increase the expense of maintenance and operation to be borne by the state. It would also cause large expenditures for rebuilding bridges.

Major Summervell, appearing for the Army engineers on May 23, said they took the position that since the conditions relating to the transfer of the canal property to the United States were practically incapable of accomplishment, the proviso had no further effect and might be ignored, and that the Chief of Engineers on September 28, 1933, had recommended that the federal government adopt the unusual procedure of making improvements on state property. "It is our position," he said, "that by the N.I.R.A. and the emergency relief act the President is vested with power to authorize the execution of this project. We think his action in that regard is the action of Congress," but Senator Vandenburg retorted that there had been no action of Congress since the 1930 act.

The provision in the 1930 act was that if the canals were taken over by the federal government for maintenance and operation they should be operated at the present depth, as barge canals only and not with any intent to make them ship canals or hinder or delay the improvement of the St. Lawrence as the seaway from the Great Lakes to the ocean. In 1933 the Chief of Engineers reported to the House committee that the special board of engineers was of the opinion that assumption of maintenance and operation by the United States was not desirable in view of the provisions of the state constitution and that if the canals are operated by the state at its own expense free of tolls the full benefit to the public would follow from the improvement at federal cost. The new bill provides that no allotment of federal moneys shall be made under the authorization unless and until the state shall have entered into an agreement satisfactory to the Secretary of War that no toll charges will be imposed for the use and navigation of the improved waterway.

It was brought out at the hearing that the New York constitution provides that the canals shall remain in the possession of the state and that no tolls shall be charged. It also provides that to change the constitution requires passage of an authorization act by two sessions of the legislature, then ratification by the people, and final approval by the legislature and the governor. One legislature has acted, in 1931, but the last session was adjourned without action and it was stated that it was undoubtedly influenced by the prospect of the expenditure of $27,000,000 by the federal government. "I feel that these conditions make it practically impossible of execution," said Major Summervell, "and since the state of New York indicates no intention of agreeing, the department now takes the position that it is proper to start the use of federal funds."

The act of the legislature in 1931 proposed an amendment to the constitution to repeal permanently the section that prohibits tolls. Senator Copeland, of New York, chairman of the commerce committee, said he thought it would be a good thing for the taxpayers of New York to put the expense of the operation and maintenance of the canal on the federal government. Senator Vanden-

burg said that the $5,000,000 will be expended "notwithstanding what we do" but that apparently "someone thought it was necessary to do something to make the situation legal." Senator Copeland said that personally he thought there was no question that under the wide powers given the President in the work-relief resolution he can spend the money in this way if he is so disposed, but Senator Vandenburg declined to concede that "he and the Major can repeal the rivers and harbors act of 1930."

C. C. Handy, general attorney of the New York Central, appearing on behalf of the railroads of New York, emphasized the unfair situation resulting from further subsidization of the canal at a time when there is no public justification for it and the railroads have so much excess capacity. He also said it was unfair and unreasonable to interject the burden of the possible loss of the $27,000,000 into the question and probably provoke the defeat of the bill in the legislature. He had suggested to the House committee an amendment which would not impair the right of the state to impose tolls, but it was not adopted, and he asked how the state could bind itself forever not to do so. Major Summervell replied that there was a practical assurance and that there was no possibility of tolls being charged within any reasonable time. When someone referred to the land-grant "subsidies" to the railroads Mr. Handy replied that every subsidy given to the railroads "was for the purpose of creating something that would be a tax-bearing proposition in the future."

B. S. Voorhees, engineering assistant to Vice-President Dougherty of the New York Central, pointed out that the proposed appropriation for deepening the canal from 12 to 14 feet and widening it includes an estimate of $3,285,000 for reconstructing bridges over it but said that amount was much too low. There are 39 highway, 3 electric railway, and 16 steam railway bridges and the railway engineers have estimated that it will cost $4,700,000 for their 16 bridges alone.

F. G. Jonah, chief engineer of the St. Louis-San Francisco, and J. B. Akers, assistant chief engineer of the Southern, appeared in opposition to the bill for deepening certain tributaries of the Warrier river in Alabama from 6 to 9 feet. Col. Jonah said that this would require the Frisco to build a new bridge at a cost of $187,240 as a contribution to the cost of creating a directly competitive transportation facility.

The Beaver-Mahoning Project

On May 24 the Senate committee heard testimony for and against the proposed canal from Beaver, Pa., to Struthers, Ohio, to be 12 feet in depth and 250 feet bottom width, through the beds of the Beaver and Mahoning rivers, the total cost of which to the government was estimated by the Army engineers at $37,000,000, and for which the Allotment Committee had recommended an allotment of $5,000,000.

In opposition to this project it was stated that it proposed the most expensive per mile cost of any canal ever constructed in the United States, $1,343,000 per mile, as compared with $106,000 for the Monongahela river, $129,000 for the Ohio, $370,000 for the New York State Barge Canal, and $277,000 for the Illinois waterway. The opposition was directed by the Upper Ohio Valley Association, composed of a group of about 150 manufacturers, coal companies, and railroads. R. P. Forsberg, chief engineer of the Pittsburgh & Lake Erie, read a statement characterizing the two streams as wholly unsuited for navigation purposes without enormous expenditures and declaring that the costs had been underestimated. Somewhat similar testimony was given by George H. Burgess, consulting engineer, and Arthur J. Lovell, vice-president of the Brotherhood of Locomotive Firemen and Enginemen, testified in opposition to the project on behalf of the 21 railroad labor organizations. He said the canal would "put two thousand of our boys permanently out of work" and would represent a subsidy to certain Youngstown corporations at their expense. Mr. Forsberg said in part:

"The banks of both streams are occupied by the tracks of the Pennsylvania Railroad, the Pittsburgh & Lake Erie Railroad, and the Baltimore & Ohio Railroad. The construction of the canal as planned would require the lifting of the railroads substantial heights to provide safe freeboard distance above the new pool levels, and the reconstruction of ten railroad bridges, and one additional bridge. No provision is made for terminals in the Army engineer's plan, nor is the cost thereof included in the estimated cost.

"In June, 1933, Major W. D. Styer, Corps of Engineers, United States Army, made an investigation of this project and submitted an adverse report in which the cost was estimated at $41,400,000, exclusive of the cost of terminals and of interest during construction on estimated cost to the United States. The Division Engineer concurred in this report, but the Board of Engineers for Rivers and Harbors, in passing it on to the Chief of Engineers, reported that the construction of the waterway, with minor changes, is advisable, but increased the estimated cost to $47,000,000. Of this amount, the board recommended that the cost of rebuilding existing railroad bridges, the cost of track changes, the cost of changes to highway bridges and highways, the cost of obtaining water rights, and the cost of right-of-way and flowage damages, which it estimated at $10,000,000, be borne by local interests. The Chief of Engineers approved the conclusions reached by the board, and the Secretary of War passed the report to Congress without recommendation.

"The estimated cost of the project as given by the district and division engineers and modified by the board of engineers is $39,000,000. The estimate of cost, the board says, was on the basis of 1931 prices, and to bring it up to date the cost to the United States should be increased to $37,000,000, and the cost to local interests to $10,000,000, making a total up-to-date cost of $47,000,000. It may be of interest to note that from the above figures prepared by the board of engineers the per mile cost of the proposed waterway will be 12½ times that of the Monongahela river.

"In their essential characteristics the Ohio and the Monongahela rivers are natural waterways and were available for water-borne traffic without the aid of man-made improvements. Not so with the Beaver and Mahoning rivers, they do not possess the same physical characteristics nor advantages. The adaptation of those two streams to navigation would be wholly artificial.

"Examination of the government's estimate shows that certain items of cost that would be incurred have been omitted therefrom and that certain other items included therein are greatly inadequate to cover the work involved.

"1. There is omitted from the estimate the cost of providing terminal facilities which the rail carriers estimate would cost at least $3,500,000.

"2. There is included in the estimate of cost of the Board of Engineers for Rivers and Harbors $6,360,000 for reconstructing railroad bridges, providing new railroad bridges over new channels, and raising the railroads, of which it is said $5,642,000 would have to be borne by local interests. The Board of Engineers arbitrarily added $8,000,000, or about 20 per cent to the total estimate of cost; and, adding this percentage to the cost of

the railroad changes given by the board produces an estimated cost of railroad changes of $7,632,000. The engineers of the rail carriers have prepared careful estimates of the cost of reconstruction of their bridges, providing new bridges over new channels, and raising their track and roadway to the height recommended by the Board of Engineers for Rivers and Harbors, and their estimate of these costs is $22,407,000, which is $14,775,000 in excess of the cost estimated by the Board of Engineers, plus the arbitrary 20 per cent above mentioned.

"3. The government engineers do not provide for interest during construction on cost to be borne by the United States. This cost would be incurred and must be added to arrive at the total cost. Computing this item on the basis of a construction period of five years and an interest rate of 4 per cent for half that period gives $6,525,000 for this item. Adding these amounts gives a total cost for the project of $71,800,000, and a per-mile cost of $2,051,000. Based on these figures the per-mile cost of the proposed waterway will be 19 times that of the Monongahela river as given by the board of engineers for Rivers and Harbors, 5½ times that of the New York State Barge Canal, and approximately 7½ times that of the Illinois waterway.

"It is our information that the entire estimate is based on preliminary plans, no detail plans and no detail appraisal of damages having been made. Experience of the past in the construction of waterways has been that actual costs have largely exceeded preliminary estimates of cost based on preliminary plans.

"The construction of this proposed waterway will entail a hardship on the steam railroads and the industries served by them in the Beaver and the Mahoning valleys that I believe is little comprehended by the public as a whole. The new pool elevations will require the raising of the main tracks of the railroads where they parallel these rivers for a distance of approximately 45 miles, at some points as much as 13 feet. The roadbed carrying these tracks are today "seasoned" or compacted as the result of millions of tons of traffic having passed over them. The new or "green" roadbed that the raising of the tracks will produce will require additional maintenance for a period of many years, that is until the new roadbed becomes thoroughly stabilized. The raising of these four main track and two main track railroads under traffic is a most expensive undertaking. The prescribed minimum overhead clearance for bridges of 27 feet above pool level sets up conditions for the railroads that are wholly unreasonable.

"It resolves itself into a proposition to further embarrass and further harass the steam railroads that I represent, which you know have suffered much during the past few years, by taking away their traffic, increasing their operating costs and discharging from their service thousands of faithful employees, all in order to give one or two large steel companies, located near the city of Youngstown, Ohio, an unwarranted advantage over their competitors."

F. E. Morrow, chief engineer of the Chicago & Western Indiana, appeared in opposition to certain features of the projects for the Illinois river, the Calumet-Sag channel, and the Calumet river near Chicago and urged that if the projects are adopted provision be made in the bill for the assumption by the government of the cost of bridge and other changes. His statement included the following:

A $20,000,000 Project Grows into $91,000,000 Project

It is the view of the railroads that if Congress should authorize these projects, even on the basis of the limited expenditure now proposed, it would be only a short time until it will be urged that the ultimate project should be carried out in order to make profitable the expenditure now proposed on the Illinois river, and on the Calumet-Sag as an initial step. A forceful illustration of this procedure is the development of the waterway between Lockport and the mouth of the Illinois river.

The people of the state of Illinois originally authorized the expenditure of $20,000,000 to provide a channel in the upper part of this waterway. The state of Illinois began the spending of this money shortly after the World War by building locks and dams for a nine foot waterway. By the time this sum was expended, this nine-foot project was only partially completed. In 1930 the project was turned over to the federal government to complete at a cost of $8,603,000. Shortly before that the federal government had undertaken the expenditure of about $3,000,000 on the lower portion of the waterway.

While the federal and state governments were spending this money, the railroads were required to spend $1,250,000 in enlarging and rebuilding their bridges and approaches to conform to the waterway.

Using substantially the same estimated traffic and alleged savings which were used to justify the expenditures listed above (but charging none of these past expenditures against the savings), it is now proposed that $15,530,000 more shall be expended on the entire project in order, as stated by the Chief of Engineers, "to provide a fully useful commercial waterway." In other words, this project which started out as a $20,000,000 project has now expanded to a $48,000,000 project.

When this Illinois river project was first started nothing was said about improvements being required in the Chicago metropolitan area because it was assumed that the Sanitary Canal and the Chicago river (a navigable stream) would be used as the connection to Lake Michigan. It is now proposed to expend $2,814,500 of federal funds and $2,600,000 of local government funds as an initial step in this area with ultimate expenditures estimated at $43,000,000 (this figure includes bridge costs). Therefore, by the time this initial $20,000,000 project is fully completed, a total of approximately $91,000,000 will have been expended, to say nothing of further expenditures proposed on the Calumet river at South Chicago and also on the main channel of the Sanitary District. The annual charges for interest, maintenance and obsolescence will amount to $4,800,000 a year against possible savings of $1,578,000.

The use of the same traffic to support successive expenditures cannot be justified.

The railroads contend that further expenditures have not been and cannot be justified.

The railroads' immediate interest in these projects is the probable effect on their bridges and other facilities. The carrying out of these projects will lead to the reconstruction of bridges, the raising of tracks and changes in other facilities, at an estimated cost of $7,088,000 on the Calumet and Little Calumet rivers and $6,811,000 on the Sag Channel.

The Sag Channel is wholly an artificial channel. Those sections of the Calumet and Little Calumet Rivers embraced in this project were, in their natural state, non-navigable in fact and have been made navigable to a very limited extent only by work performed by the federal government and Sanitary District of Chicago. The improvement of these particular sections, as proposed, therefore represents the creation of a new commercial waterway.

All of the cost of making changes in bridges and other facilities should be included as a part of the cost of the project in determining economic justification and in fixing the responsibility for the making of these changes. If Congress should authorize this Calumet-Sag project it should make provision for the United States to assume the expense of the reconstruction and alteration of the bridges and other facilities involved in this project, if and when such reconstructions and alterations are required.

The War Department has announced that the $25,000,000 allotted for improvements in the Upper Mississippi river will be applied to the construction of five of the remaining seven locks and four of the remaining dams, and other minor miscellaneous work. The canalization of this river to provide a 9-foot channel to St. Paul, Minn., was started with an appropriation of

$7,500,000 by Congress and allotments totalling $51,495,000 were provided by the P.W.A. for the continuation of the work.

Dr. Duncan Urges Complete Analysis of Costs

In advance of the detail presentation on behalf of the railroads, C. S. Duncan, economist, Association of American Railroads, presented a statement emphasizing the importance of taking into consideration all of the costs involved in waterway construction. He said in part:

It is our observation that all too frequently the reports upon improvement projects take into account only those items of cost which are immediately concerned with the project itself, and which are to be borne directly by the government, omitting entirely from consideration those other items of cost or damage which may be imposed upon individuals, corporations or political subdivisions affected by the project. These may be called contingent or collateral costs. Thus, the improvement of a river or an artificial channel such as a canal usually entails the modification of bridges on highways and railroads, changes in grade, readjustments of track and consequent increased capital and operating costs.

In accounting for costs it is also true, in most of the reports by the Army engineers, that important factors are omitted, such as depreciation, obsolescence and cost of financing. Army engineers, however well trained and experienced in their own particular field, are, after all, not really in business. They are never responsible for the ultimate outcome from an economic point of view for any project. Hence, it is not unnatural that such items escape their attention. They are none the less there. It is our contention that these contingent or collateral costs should be ascertained and reported whether the improvements are made on so-called navigable streams so as to canalize them or on artificial channels such as canals.

We find that the army engineers, in reporting upon benefits, usually include only the direct savings which may accrue prospectively to business using the proposed improvement. They do not undertake to determine or to report upon any detrimental effects which will otherwise result, such, for example, as the diversion of business from its former channels.

All costs and all interests affected should be most carefully appraised as a basis for the final determination as to the wisdom of undertaking a specific project. Not unless or until the benefits thus appraised outweigh the costs and detriments or damages or losses, likewise carefully appraised, should any project be approved.

Definition of Costs. We now offer as a basis of our approach to these questions a definition of costs to be applied in the case of all public improvements, including the projects under consideration here:

> The estimate of costs for a public improvement project should include all expenditures and charges pertaining to its creation and development as a going concern and all recurring or annual expenditures and charges incident to its continued functioning and ultimate extinction. The estimates should also include all costs that the project may impose upon other interests, irrespective of liability and possible allocation.

Economic Justification. If and when a careful analysis has been made, of the costs of and benefits expected to be derived from a public improvement project, then only is Congress in a position to determine whether a proposed project should or should not be approved. If the basis of approval is economic justification, then the expenditure of public funds for any improvement project should be conditioned upon a finding, after competent examination, that a reasonable net benefit will result.

It follows, therefore, that with respect to any public improvement project, approval of such project should not be had unless the net benefits are in excess of costs.

It is our purpose to apply these tests to certain projects included in the present bill.

The rail carriers are not opposed to competitive water transportation under any and all circumstances. If the proposed waterways are a necessary, a reasonable and an economic development and the operations thereon are self-supporting and appropriately regulated, the rail carriers have no right to complain, even though their special interests are adversely affected.

Certainly the government should not continue improvements on inland waterways or extend operations thereon, except where the expenditures are justified after full allowance is made for all costs involved, including the cost to the taxpayers who furnish the funds for improvement and maintenance of these projects. In every instance, proper consideration should be given to the effect that the proposed improvement and extension of operation on inland waterways will have upon other forms of existing transportation, the continued existence and adequacy of which are essential to the public welfare.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 18 totaled 583,327 cars, an increase of 8,142 cars as compared with the week before but a reduction of 29,004 cars as compared with the corresponding week of last year. This was, however, an increase of 47,608 cars as compared with the corresponding week of 1933. All commodity classifications except ore showed reductions as compared with last year, but both coal and ore showed increases as compared with the preceding week. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, May 18

Districts	1935	1934	1933
Eastern	137,709	140,831	123,939
Allegheny	114,510	124,223	100,303
Pocahontas	38,278	42,738	35,660
Southern	84,317	84,340	81,840
Northwestern	82,451	86,923	66,249
Central Western	81,195	85,610	79,011
Southwestern	44,867	47,666	48,717
Total Western Districts	208,513	220,199	193,977
Total All Roads	583,327	612,331	535,719
Commodities			
Grain and Grain Products	25,172	28,618	35,402
Live Stock	12,515	16,224	15,596
Coal	100,876	104,803	80,981
Coke	5,955	6,856	3,907
Forest Products	24,200	24,989	21,604
Ore	27,275	24,985	8,436
Merchandise L.C.L.	158,859	164,278	166,258
Miscellaneous	228,475	241,578	203,535
May 18	583,327	612,331	535,719
May 11	575,185	602,798	534,806
May 4	569,065	605,246	527,118
April 27	558,886	609,704	538,809
April 20	610,905	591,705	496,512
Cumulative Total, 20 Weeks	11,541,361	11,726,003	9,872,502

The freight car surplus for the last half of April averaged 310,099 cars, a decrease of 522 cars as compared with the first half of the month. The total included 174,556 box cars, 87,856 coal cars, 27,294 stock cars, and 8,449 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended May 18 totaled 43,561, as against 44,670 cars last year and 38,400 cars for the previous week which contained a holiday (May 6), according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
May 18, 1935	43,561	21,532
May 11, 1935	38,400	21,239
May 4, 1935	43,196	21,780
May 19, 1934	44,670	23,712
Cumulative Totals for Canada:		
May 18, 1935	850,512	454,397
May 19, 1934	832,190	471,048
May 20, 1933	673,107	346,615

Western Club Hears About Research

Annual meeting featured by L. W. Wallace's address outlining the possibilities of equipment research

UNDER the title "What Is Not Yet, May Be," L. W. Wallace, director of equipment research, Association of American Railroads, delivered the principal address at the annual dinner and meeting of the Western Railway Club, held Monday evening, May 20, at the Hotel Sherman, Chicago. In considering this subject, Mr. Wallace emphasized the possibility of still further striking improvements in railway equipment as a result of co-ordinated research. He outlined the principal objectives of the new research division, recently set up by the association, and explained in general how it will operate, emphasizing the necessity of full co-operation with individual railroads and with other research groups, if the best results are to be obtained. An abstract of Mr. Wallace's address follows.

The railroads of the United States, with the co-operation and oftentimes the leadership of the manufacturers, have long pursued a policy of research. There are many evidences of the accomplishments so realized. Therefore, when the Association of American Railroads determined that one of its important departments should be that of planning and research, it did not thereby conceive something about which there had been no experience. The idea is new only in that it provides a better means for co-operation and for expediting research now in process, or that may be undertaken. This new alinement emphasizes the fact that the railroads, like other industries, have a full appreciation of the value of research, and they, like other industries, have provided a means for an extension of such effort and quicker accomplishment of the results to be sought.

This new approach means, as I conceive it, the railroads will change to meet new conditions and new technological advances just as they have been doing ever since stones served as ties and the only headlight was a bonfire on a flat car pushed ahead of the engine, with this difference: Owing to the better co-ordination and correlation now made possible, it should be within the realm of practicability to take advantage of technological advances more rapidly and effectively. To this end, efforts will be directed constantly.

My place in the picture is that of director of equipment research. I conceive my duties to be: The co-ordination of all research activities relating to the mechanical equipment of American railroads; planning the work to be done; directing where it should be conducted; deciding sequences of activities or in general, pursuing many diligent investigations to discover facts.

Proper Approach to Problems of Research

It is my conviction that the fundamental requirements of one engaged in research are: An open mind; freedom from the shackles of precedent; no pride of opinion nor of authorship; willingness readily to modify conclusions where new conditions and new elements make it clear that such modifications are justified. In short, one engaged in research must maintain the attitude of mind that says, "What is not yet, may be." If he departs far from this fundamental principle, he is in danger and his usefulness will be greatly lessened.

A research agency should be ready and anxious to support long established methods if actual facts show them to be fundamentally sound. On the other hand, if actual facts do not support long established methods, a research agency should have the courage to say so, and why, and strongly support such a position.

It is known to all of us that in the development of an art, the continuing contributions of scientific research frequently bring to light facts which entirely invalidate established methods. As an illustration of this, a very unique and noteworthy celebration held at one of the plants of the Great Southern Lumber Company a few years ago, was the occasion of placing a bronze plaque upon a sawmill refuse burner. Inscribed upon this plaque was this epitaph: "Refuse Burner; born, October 1, 1908; died, July 4, 1924. Every day during my life of 16 years, I have consumed daily 560 cords of waste material, or a total of 2,688,000 cords. I cost $25,000 but my fire has destroyed $1,344,000 worth of what was formerly considered waste. The complete utilization of the sawmill refuse in the manufacture of paper has my fire forever extinguished."

The sawdust and other refuse are now literally blown to atoms, the atoms are then collected, compressed and rolled into building boards. Thus, the eyesore and public nuisance of the sawmill pile is rapidly passing from the scene. It may be necessary in the future, as it has been in the past, to blow some long-established methods to smithereens because of changed conditions and current actual facts.

Another very important guiding principle is to be sure to ascertain what work has been done on a given subject and what the literature of the world has disclosed regarding that subject. Such a policy safeguards against a duplication of work and aids in avoiding making the same mistakes that others have made. It must be realized, however, that negative results have their value. They have their value in two regards, first, they bring to light the dead-end streets, so to speak, and the avenues where more illumination is required. They show where the peaks and valleys are and, therefore, at which points grading and filling are necessary. The second value of negative results is that of pointing the way to more hopeful fields of endeavor. It is generally exceedingly valuable to have an indication of the hopeful direction in which to move even though that indication arises from a prior failure. Thus again, a failure at one time and under a given set of conditions may at another period be turned into a success because of the development of the art, the contributions of science in the meantime, or an entire change of predominating conditions. It is well to remember that no experience is a total loss for at some time and in a very unexpected fashion what was presumed to be a loss may prove to be exceedingly valuable.

Research Activities Must Be Co-ordinated

One of the most important functions and responsibilities of an agency engaged in research is to know as much as possible about other research agencies, their

personnel, their programs and the character of work done by them. This is particularly necessary if one is engaged in research relating to railroads for the reason that practically every known material and piece of equipment used in industry are also found in railroad operation.

Therefore, to develop a research agency within the Association of American Railroads competent within itself to handle intelligently, economically and constructively all of the potential projects that may arise would require an agency equivalent in size, as to regards equipment, personnel and budget, to the National Bureau of Standards. This would involve a tremendous expenditure and I am not sure that even if the funds were at hand it would be a wise course to pursue. It is our belief that we can do more effective work at less expense and command higher talent by utilizing existing facilities and personnel than by constructing any laboratories of our own, or attempting to build up a permanent staff that would be adequate for the demands.

It is, therefore, our purpose to follow a course of the closest possible co-operation with all agencies and instrumentalities as we proceed in our work. The problems to be confronted are so diverse and important that only through the policy of utilizing to the greatest possible degree existing information, the developments that are in process and a cross section of the most reliable experience can satisfactory progress be made and sound conclusions drawn. I have no illusions regarding this matter. My function is largely that of a catalyzer —an element to accelerate action between two or more elements without myself combining with either of them or undergoing any permanent change. Or, again, that of a thought detonator—to stimulate united thought and action.

As a catalyzer, I was placed in the pattern of railroad research about four months ago. I am sure that each of you appreciates, therefore, that I am not prepared to say what projects are going to be undertaken. Neither am I prepared to say what shall be the final policy of the Division of Equipment Research. However, I have endeavored to indicate my general attitude and to state some of the principles which must prevail. I am delighted to be able to say this—my observations and contacts have clearly disclosed that there is tremendously important work to be done. And most encouraging of all, there has been presented to the division for consideration many tangible practical problems which are today confronting railroad officials. In a large measure, these problems have been submitted by individual railway officers, themselves, or by agencies representing all railroads. It is obvious the division will not have to create projects from the figments of imagination, but, rather, it will be thoroughly occupied with concrete pressing problems. It is also of interest that most, if not all, the projects now before us will require thoroughgoing scientific research.

Keen Interest in Railway Research

I am particularly pleased to be able to say that one of the striking impressions gained has been the keen interest manifested in the research of the Association of American Railroads on the part of railroad officials, manufacturers and the public. The fact that the railroads of the United States have launched such a program has stirred up great interest. There are many who feel that the effort promises much and thereby the railroads will be able more adequately to meet the competition that is confronting them.

This I can also say with much satisfaction—I have never met with more sincere interest, a deeper desire to co-operate, or a more pronounced conviction that an extremely important piece of work needs to be done and that real achievement will be realized, all of which supports the statement made by C. D. Young when he said: "It is a universally accepted principle that the individual success of the various railroads comprising the Association of American Railroads is, in the final analysis, proportionate to their capacity to co-operate for the common good." May I add that not only the individual success of the various railroads, but that of all manufacturers, in the final analysis, will be proportionate to their capacity to co-operate for the common good. May I also further add that the success of the Division of Equipment Research will be proportionate to its capacity to co-operate with all concerned and to the willingness of all concerned to co-operate with the Division of Equipment Research for the common good. If all factors concerned will adhere to this principle, there is no limit to the results that may be obtained and there is a real promise of a radiant day, the like of which the railroads have never experienced. May I solicit your earnest, continued and unbiased co-operation?

New Officers Elected

The dinner at which Mr. Wallace spoke and the subsequent meeting of the Western Railway Club were presided over by President A. N. Williams, who is also president and general manager of the Chicago & Western Indiana and of the Belt Railway of Chicago. A feature of the evening was the presence at the speakers' table of 16 past-presidents of the club. Other guests included M. J. Gormley, executive assistant, A.A.R.; A. G. Pack, chief inspector, Bureau of Locomotive Inspection, I.C.C., and W. E. Fuller, assistant to the traffic vice-president, Chicago, Burlington & Quincy, who made a short, but highly entertaining and stimulating address preceding that of the main speaker. At the conclusion of the dinner the president presented a brief business report showing that, from the point of view of membership, financial condition and attendance at the club meetings during the past season the club has had one of the most successful years in its history.

The business meeting was concluded with the election of the following officers to guide the activities of the club during the coming year; President, L. Robinson, assistant to general superintendent of motive power, Illinois Central; first vice-president, D. C. Curtis, chief purchasing officer, Chicago, Milwaukee, St. Paul & Pacific; second vice-president, F. G. Gurley, assistant vice-president, Chicago, Burlington & Quincy; treasurer, J. W. Fogg, MacLean-Fogg Lock Nut Company, Chicago. C. L. Emerson, master mechanic, Chicago, Milwaukee, St. Paul & Pacific, was continued as secretary.

The following were elected directors of the club for the coming year: Clarence Mellor, Barco Manufacturing Company; J. E. Buker, Vapor Car Heating Company; J. T. Gillick, vice-president, Chicago, Milwaukee, St. Paul & Pacific; L. R. Wink, assistant superintendent car department, Chicago & North Western; J. E. Bjorkholm, assistant superintendent of motive power, Chicago, Milwaukee, St. Paul & Pacific; E. E. Thulin, Duff-Norton Manufacturing Company; H. P. Allstrand, principal assistant superintendent of motive power and machinery, Chicago & North Western; C. T. Ripley, chief mechanical engineer, Atchison, Topeka & Santa Fe; G. F. Slaughter, American Steel Foundries; P. J. Colligan, general superintendent of motive power, Chicago, Rock Island & Pacific; O. E. Ward, superintendent of motive power, Chicago, Burlington & Quincy, and A. N. Williams, president, Chicago & Western Indiana.

Freight Claim Division Meets at Chicago

Plans formulated for reducing loss and damage payments further—Principles and practices made more effective

PLANS for reducing freight loss and damage payments still further through preventive measures and by adjusting claims in accordance with the carriers' legal liability were formulated at the forty-fourth annual meeting of the Freight Claim division, A. A. R., at Chicago on May 21-25. At this meeting, over which Chairman H. M. Moors, general freight claim agent of the Southern Pacific Lines in Texas and Louisiana, presided, the following officers were elected for the ensuing year: Chairman, J. L. McCormack, superintendent of freight loss and damage claims of the St. Louis-San Francisco; first vice-chairman, W. C. Johnson, freight claim agent of the Chicago & North Western; and second vice-chairman, J. B. Mordecai, traffic manager of the Richmond, Fredericksburg & Potomac. The next annual meeting will be held at Washington, D. C.

Action at this meeting was concentrated upon efforts to strengthen the principles and practices governing the investigation and disposition of freight claims that were adopted in 1933, and thereby eliminate certain abuses in claim settlements which are a drain on freight revenues. To this end, the members increased the power of the General committee by empowering it to act on behalf of the division in any emergency prior to the next annual meeting and authorizing it to abolish, amend or adopt rules of order, principles and practices and freight claim rules when a situation demands immediate action. At the same time many of the rules governing claim adjustments were made more exacting and changed to bring about uniformity among the railways.

Central Bureau Plan Rejected

A proposal of the General committee that a central bureau be formed to investigate and adjust freight claims was rejected by a vote of 198 to 21. The proposal contemplated that this bureau would be under the supervision and jurisdiction of the Freight Claim division in Chicago and would consist of a force of experienced and competent freight claim investigators who would study the claims paid by member lines to determine whether payment was in accordance with the carriers' legal liability and in harmony with the division's principles and practices.

According to the committee, this procedure would promote and insure uniformity of action and would discourage the filing and prevent the adjustment of all claims that do not measure up to the standards provided for by the principles and practices. Through the central agency's interline apportionment plan, the committee anticipated a saving to the carriers due to payroll reductions in individual offices, simplified accounting, the elimination of interline correspondence and the elimination of arbitration. The majority of the members, however, felt that the plan would destroy the contact of individual railroads with their shippers and would not result in the savings anticipated.

Chairman Moors Summarized the Problems

Chairman Moors reviewed the problems of the division in part as follows:

The total loss and damage payments for 1933 aggregated $15,485,440 and for 1934, $17,034,031, an increase of $1,548,591, or 10 per cent, as compared with an increase of 5.4 per cent in total carloadings and an increase of 5.6 per cent in gross freight revenue. While this showing, on its face, appears to be rather unsatisfactory, allowance must be made for the very substantial increase in commodity prices, some of which ranged as high as 40 per cent. Furthermore, the increase in payments was mostly on those commodities which showed the largest increases in values, such as food products. When these circumstances are taken into consideration, the increase is easily explainable and justified. The ratio of loss and damage payments to gross freight revenues is conceded to be the correct basis for determining whether payments are excessive, which ratio was 0.61 for 1933 and 0.62 for 1934, or practically the same. The ratios for 1933 and 1934 were the lowest in the history of the division.

The adoption of the principles and practices, the enlargement of the Chicago organization and the employment of an executive vice-chairman had as their main object the bringing about of corrections and reforms in the handling and payment of claims on so-called perishable freight. Although there was an increase of 10 per cent in total payments, the payments on perishable traffic for 1933 aggregated $5,641,244 and for 1934, $5,318,155, a decrease of $323,089, or 5.7 per cent. Furthermore, the total payment per car handled in 1933 averaged $7.25, whereas in 1934 it was only $6.31, a decrease of 94 cents per car, notwithstanding the fact that there was also a substantial increase in the value of these commodities. Therefore, I feel warranted in saying that, based upon our experience, if we had not made the changes in our organization, adopted the principles and practices and directed our efforts to this traffic, the payments, instead of showing a decrease of $323,089, would have shown a very substantial increase. However, claims on perishable freight are still our major problem, representing as they do over $5,000,000, or 31 per cent of the total payments. Nevertheless, the fact that we saved carriers during the past year over a quarter of a million dollars in the payments of claims on this class of traffic demonstrates what can be done by the division when efforts are concentrated on particular problems.

M. J. Gormley Speaks

M. J. Gormley, executive assistant of the Association of American Railroads, also spoke on the activities of the division in part as follows:

We have had a co-ordinator of transportation for two years. You will remember that when I met with you at Louisville, I said that if you performed your job as you knew how to perform it, you would not need to worry about whether you had a co-ordinator or not. At that time you adopted some radical departures from previous operations in the Freight Claim division when you set up the principles and practices and when you finally convinced the railroads that they ought to have their own perishable inspection service. You took a very radical step forward, much more radical, I think, than you yourselves believed. The results are apparent.

You are doing the things that must be done to keep the American railroads on the map, for in the final analysis the salvation of the railroads is going to rest upon their ability constantly to reduce their operating expenses to a point where the traffic that rightfully belongs to them will not move by any other means of transportation. Do not misunderstand me as thinking that these other and newer forms of transportation do not have a proper place in the picture. They have. But they are getting outside of that very rapidly. They are allowed to go out and bargain for traffic just as we used to do back in 1887, so that one shipper today does not know what the other one is paying, and the railroads do not know what they are paying. The traffic manager of an industry comes in with his chisel, knocks down a particular rate, and after he gets it knocked down, the truck cuts once more and we are giving away the hard earned income of these railroads in wasteful competition.

A bill has been passed by the Senate regulating buses and trucks. We hope that it will soon be passed by the House.

When that is done and the trucks are properly regulated, and in addition to that, are required to pay their way for the use of public-built highways, we will have an end to the present chaotic condition, and stabilize transportation to a degree that cannot be brought about in any other way.

Claim Prevention

Another subject given detailed consideration at the meeting was claim prevention activities. The report of the Committee on Freight Claim Prevention showed that loss and damage in 1934 amounted to 0.62 per cent of the freight revenue, as compared with 2.95 per cent in 1919, while that of the Canadian railroads was only 0.33 per cent of their freight revenues in 1934, as compared with 1.9 per cent in 1919. The committee's study of commodities contributing to this condition revealed that loss and damage to melons amounted to $17.64 per car, or $6.77 per $100 of revenue; to fresh fruits, except citrus, to $5.88 a car, or $2.41 per $100 of revenue; and to sewer pipe, etc., to $4.74 per car, or $6.78 per $100 of revenue, while it amounted to only 11 cents per car per $100 of revenue with lumber and forest products; and $1.57 per $100 of revenue for all l.c.l freight.

During the general discussion of loss and damage prevention, a motion to eliminate the rough handling column from the classified summary of freight loss and damage expenditures was adopted. It was the general opinion that under present-day conditions it is impossible to determine what constitutes rough handling and as a result damage due to improper handling, loading, unloading, stowing, or where the cause is unknown, is often charged to rough handling, with the result that rough handling has continued to show an increase each year, in spite of the fact that train operation has been greatly improved. In addition, it was felt that much of the damage attributed to rough handling is really caused by cars that "bounce," floor vibration and other conditions of a mechanical nature.

Suggestions for More Effective Work

During this general discussion of prevention, H. T. Lively, general claim agent of the Louisville & Nashville, presented suggestions for more effective prevention activities, among which are the following:

The greatest opportunities lie in the intelligent direction of the activities of the special representatives, all of whom are capable and experienced railroad men, for there are many fields that are "white unto harvest" for special study and prevention application.

A continuation of the present plan of conducting special studies or investigations of problems of national interest and concern, such as the recent studies of the "concealed damage" problem, should prove beneficial. The National committee, through its special representatives, is in better position than any other agency to make such studies.

It is recognized that the territorial claim conferences offer fields for prevention activities that are not open in other organizations. Therefore, the National committee should do all within its power to encourage the conferences in their prevention work.

At times considerations other than actual loss or damage enter into claim payments and all considerations except actual loss and damage for which carriers are liable should be removed.

One of the great needs in claim handling is that of more definite and exacting reports at loading stations, particularly on perishable freight. Under present conditions, most of such reports are too vague and indefinite to be of any substantial value from a claim-handling standpoint.

Closer co-operation between prevention departments of individual lines is needed, particularly in connection with shipments requiring special skill in loading, bracing, etc., moving interline.

Consideration should be given to the embodying of prevention principles in more of the freight claim rules.

There is need for a better understanding of the aims and purposes of the prevention departments by other departments. This is particularly true in respect to the traffic departments which ought to be deeply interested in the work of the prevention departments, since every avoidable case of loss and damage is a reflection upon our service.

Freight Claim Conferences

C. L. Jellinghaus, superintendent of property protection, New York Central, discussing the value of freight claim conferences in prevention work, said in part:

As a broad picture of procedure in the conduct of prevention activities, which would be helpful, the following may be suggested:

1. That conference members bear in mind constantly the necessity of furnishing material for the consideration of the Prevention committee, as for instance (a) the result of individual carrier studies, including claim analyses; (b) new problems developing through changes in manufacture, shipping, packing, etc.; (c) new "wrinkles" in loading and packing.
2. That conference members collect their experiences on various commodities or claim causes as material for special discussion at meetings.
3. That regular attendance of prevention officers or their representative be arranged for.
4. That the Prevention committee at its meetings enlist the assistance of the specialist.
5. That the Prevention committee arrange for special consideration at conference meetings of the more important subjects, inviting the specialists and having them enter into the discussion.
6. That in certain conference discussions, when found desirable, shippers or consignees be invited.
7. That the chairman of the Prevention committee act as chairman pro tem of the conference during the period devoted to prevention matters inasmuch as he is thoroughly familiar with the subjects and the considerations which brought forth the finished reports and on this account can secure participation in discussions to better advantage.
8. That whenever possible, special representatives attend conference meetings and even Prevention committee meetings.
9. That the conference minutes be more complete and summarize briefly the high points of discussions.
10. That a summary of the more important prevention subjects reported upon and discussed be prepared, preferably by the Prevention committee, which each conference member will undertake to distribute to division superintendents and others concerned for use mainly at division loss and damage meetings.
11. That conference meetings be held at regular intervals, at points where the largest membership attendance is assured.
12. That the secretary of the Freight Claim division arrange for the interchange of minutes of conference meetings.
13. That the Prevention committee of the division review the conference prevention reports currently and undertake a closer guidance of activities through suggestion and criticism.

Work on Individual Lines

O. Maxey, superintendent of freight loss and damage of the Rock Island, offered suggestions for prevention activities on individual lines. He said in part:

The prime need of prevention is organization, with the purpose of making its aims and activities familiar and agreeable to officers and employees in all branches of the service and inviting their co-operation. The ideal organization is one that will reach and interest your people as individuals in the midst of their daily employment.

Among the devices giving expression and publicity to prevention principles, the division meeting is probably most nearly universal and undoubtedly has accomplished a great deal of good. The influence of such meetings is brief, however, unless they are produced by local organizations definitely charged with specific duties in the examination of their operation and the location and treatment of their discovered shortcomings. The periodical visits of missionaries from afar are interesting, and impressive in a degree, but no comprehensive understanding of the subject can be had by casual and occasional contact with it.

Our acquaintance with shippers should be extended as much as possible by a display of interest in their industries, their processes, their production and their distribution, so that when occasion arises to offer suggestions they can be presented on a basis of acquaintance to persons in authority without arousing suspicion of motives promising profit to the carrier alone. In those contacts with shippers I believe that our footing will be more secure if we leave the word "claim" out of titles and casual conversation, being satisfied to have our activities identified by the public with prevention of loss and damage and in the interest of reliable service.

Railroad Problems Not Complex*

Satisfactory solution is possible if government will treat railways fairly in competitive relations

By J. J. Pelley

President, Association of American Railroads

A GREAT deal has been said and written about the present railroad situation, the railroads' possible future, their relationship to governmental regulation and to other means of transportation. To some the problem appears to be very complex, but as a matter of fact it is not complicated at all. It is capable of a satisfactory solution if we can convince governmental authorities and others that the railroads are entitled to fair treatment in common with all other means of transportation in the field of regulation.

There are, in fact, aside from the depression, which affects all industry, only three major questions facing the railroads today. They are:

1. Should competing forms of interstate transportation be regulated by the government in a way comparable with the regulations imposed upon the railroads, and should those competing forms of transportation be required to pay their own way, without subsidy from the government?

2. Should restrictive laws that prevent the railroads from carrying out all the economies that are possible by joint action be removed?

3. Should any laws be enacted that will add to the expense of railroad operation, and at the same time will add nothing to the efficiency and economy of operation?

Comparable regulation of competing forms of transportation, in our opinion, has been too long neglected. This regulation has now been recommended, with but few exceptions, by all interested. The senate passed a bill on April 16 covering the regulation of motor vehicle operations. The matter is still under consideration in the House of Representatives. We are, however, hopeful that this regulation will be made effective at this session of Congress.

From 1906 to 1933, inclusive, the cost to the United States government of inland waterways—covering rivers and not the great lakes—was $785,288,025, including $432,753,382 for capital expenditures, $138,481,080 for interest, $96,289,191 for maintenance and $117,764,372 for operation. These expenditures took business off the railroads, and not one dollar of money spent is returned to the government.

Consider, for example, just one project of waterway development, that on the upper Mississippi river. The annual cost for maintenance, operation of locks and snagging, paid directly out of the federal treasury, is somewhat more than $2,500,000. This amount, equal to $1.40 for every ton of traffic moving over this route, includes nothing for interest on the capital invested. If interest on the capital investment at four per cent is added, it means another $1.40 per ton for all traffic moved. In other words, the taxpayers are paying out $2.80 per ton for the traffic now moved on the upper Mississippi river. This is the kind of competition the rail carriers have to meet.

These actual facts are not taken into consideration by those who make statements that transportation by water is cheaper than by rail. They clearly indicate that the taxpayers are paying out more in taxes than is being saved in freight charges by those in a position to use the waterways.

Based on a study made by three of the outstanding authorities in the United States, none of whom has ever been especially interested in the railroads, the obligation of motor vehicle operations for the construction and maintenance of highways in 1932 exceeded their contribution in gasoline taxes and license fees by $594,-687,000. For the period of the greatest highway expenditures — 1921-1932 inclusive — the corresponding subsidy by government to motor vehicle operations amounted to $7,119,794,000.

This continuous spending of millions of dollars by the government for competing transportation systems, which add greatly to the existing surplus of transportation facilities and which are not required to move the traffic of the country efficiently, is not in the public interest. At the same time, the modes of transportation that use the waterways and the highways are not required to pay proper compensation for the use of such facilities for the conduct of their business, a situation detrimental to those forms of transportation that fully pay their way. When transportation companies that use the highways and the waterways for conducting commercial business pay their way for the use of such facilities, and are properly regulated, they will then be on a basis more nearly comparable with the railroads, and this will eliminate the chaotic transportation situation and stabilize it to the benefit of all interested.

There is nothing new about the co-ordination of terminals and joint operation of facilities by the railroads. It has been going on for years. A study made some years ago relating to this question showed that there was then joint operation by two or more railroads of 24,-000 miles of railroad; 263 engine terminals; 1,366 l.c.l. freight houses, 1,902 passenger stations; 618 yards; 472 large bridges; and 1,013 points where freight cars were interchanged, at which inspection was performed by joint men. Considerable additions have been made to this list since this study was made.

Prior to and early in the operation of the Emergency Railroad Transportation act, the railroads, recognizing the need for co-ordinated action in the interest of economy, undertook careful studies of the possibilities of co-ordination, in the belief that they could themselves accomplish a great deal along the line of the declared purposes of the act. It was believed that the labor clauses in the act would not apply unless these co-ordinating projects were ordered by the co-ordinator or one of the co-ordinating committees created by the law.

When this contemplated action was brought to the attention of the co-ordinator, that officer, believing that the spirit, if not the letter, of the law prohibited such action, addressed communications to the regional co-ordinating committees, asserting his purpose to bring all projects dealing with unification of facilities under the scope of

* From an address made before a joint meeting of the Chicago Association of Commerce, the Traffic Club of Chicago, the Illinois Manufacturers Association, the Railway Business Association and the Mid-West Shippers Advisory Board on May 29.

the act, so that the labor provisions therein would apply.

I am not criticizing this action of the co-ordinator—I am merely calling attention to the fact that not only did the act prevent official action but, as interpreted and applied by the co-ordinator, it prevented unofficial action looking toward economy, provided such economy could not be accomplished otherwise than by joint action.

To indicate the possibilities of economies in joint terminal operation, we find in a study of only 663 projects made by the railroads, which in a number of instances were made with the assistance of the co-ordinator's staff, that there was a possibility of saving $18,231,413 per annum. None of this saving could be made effective due to the operation of the Emergency Railroad Transportation act, which specifies that the railroads shall not have a fewer number of men than they had in May, 1933, and that no employee shall be in a worse position as to compensation than he was in May, 1933, by reason of any action taken under the Emergency Railroad Transportation act.

The result has been precisely what might be expected. The federal co-ordinator has stated many times in public addresses that the effect of including the labor clauses was largely to prevent the economies that were the primary purpose of the act. It cannot be said, therefore, that the act was simply harmless. It was positively harmful, in that it prevented a continuation of the progress that had been made through the years by the railroads in co-ordinating their facilities. The railroads have recognized for some time that they must have a more perfect union and this has been urged by the co-ordinator, prior to his appointment to that office and since.

As you know, the federal co-ordinator has made many studies of the problems in the field of transportation, in which he has been aided by the railroads and by those who operate other forms of transportation, as well as by the general public. He has incorporated these studies in numerous reports and recommendations, many of which have been valuable. He has made recommendations to Congress with respect to legislation, and the railroads are heartily in accord with the co-ordinator's suggestions dealing with the regulation of all forms of competitive transport.

All the proposals of the co-ordinator, and other subjects as well, are receiving careful study by individual railroads, by the co-ordinating committees, and by the Association of American Railroads. These include the so-called car-pooling plan, the merchandise survey, the passenger traffic survey, the simplification and revision of the rate structure, the revision and simplification of classifications, and the simplification of accounting, as between the federal government and the railroads and as between the railroads themselves, and many other matters.

The railroads, through this association, adopted a radical departure from long established practice in putting into effect on May 1 the "average" plan of settlement for the use of box cars between railroads. In settling balances due other railroads for the use of box cars, each railroad under this plan will compute the amount due on a basis of monthly averages, rather than for the actual number of days that each foreign car is held.

The association has recently settled several controversies among railroads that otherwise might have been matters of controversy before the Interstate Commerce Commission. The troublesome question of many years' standing of division of through rates between the railroads is now on its way to settlement through the medium of this association.

Western Railways Merchandise Service

(*Continued from page 848*)

the week of June 10 to 15 as Railroad Week and urging their fellow citizens to take part in local observance. Service organizations will make railroads a feature of their meetings during the week, while public schools will present interesting information regarding railroad progress to their pupils. Motion picture theaters will display pictures featuring the railroads, while newspapers and display advertising will make appropriate mention of Railroad Week.

One feature of the plan that is appealing strongly to the public is an invitation extended by the western lines to the public to visit railroad shops, roundhouses and other facilities in their communities. To facilitate the handling of these visitors, the railroads are preparing to operate flat cars equipped with seats to serve as sightseeing vehicles through terminals and yards.

To carry out the plans for Railroad Week, railroad personnel is being thoroughly organized. The Western Association of Railway Executives has called upon the officers of each member line to appoint local representatives and these local representatives of each line are being organized into local committees. Presidents, vice-presidents and traffic and operating officers are working with these committees. The committees are contacting mayors, clubs, schools, theaters, newspapers and other organizations to secure their co-operation and are arranging for visits to railroad facilities. These committees are also providing speakers for meetings.

To insure publicity for Railroad Week, every locomotive whistle on every western railroad will be blown at 8 a. m. on June 10, this chorus of blasts being the signal that Railroad Week has started. On the same day trick "trains" or "locomotives" owned by the "40 and 8" groups in various cities will be operated over prominent city streets, carrying signs or banners with the legend, Railroad Week.

On June 10 or 11, the telegraph systems of all western lines will be joined into a single circuit for 15 min. as a special event. This unusual "round robin" circuit will include, among other points, Chicago, St. Louis, Mo., Kansas City, New Orleans, La., Dallas, Tex., San Antonio, Omaha, Neb., Denver, Colo., Los Angeles, Cal., San Francisco, Portland, Ore., Seattle, Wash., St. Paul, Minn. Minneapolis and Milwaukee, Wis. At these points old-time telegraphers will operate the keys, mingling reminiscences of pioneer railroading days in the West with greetings to each other and remarks about the modernity and speed of the western railroads today.

Junior chambers of commerce will make the western railroads the subject of a meeting during the week and are scheduling speakers for the occasion. At Chicago, the Junior Chamber has invited Harry G. Taylor, chairman of the Western Association of Railway Executives, to sound the keynote of Railroad Week on June 10. Movie stars or stage celebrities at important terminals will cut ribbons in front of the first crack transcontinental train to leave during the week. Special stories and picture releases on veteran train men who are winding up long periods of service during Railroad Week have been prepared and will be distributed to newspapers. Historical societies and local museums, such as the Chicago Historical Society and the Rosenwald Museum at Chicago, will arrange special railroad exhibits. In dining cars, patrons will be served an ice cream novelty, such as an "iron horse," connoting travel by train.

The inauguration of new streamlined trains and fast

schedules on several railroads, coinciding with the merchandising campaign of the western lines, has emphasized western progress and aroused marked interest. The speeding up of service between Chicago and the Twin Cities, which has held public interest since January 2, when the Chicago & North Western inaugurated its "400" on a 7-hr. schedule, is now commanding even more attention with the inauguration of 6½-hr. schedules by the Chicago & North Western, the Chicago, Burlington & Quincy and the Chicago, Milwaukee, St. Paul and Pacific and the introduction of trains of new designs by the Burlington and the Milwaukee. Indicative of the widespread interest which these trains have created is the large number of people who have passed through them while on exhibition prior to being placed in service, the total for the Twin Zephyrs and the Hiawatha being more than 342,000 persons.

The inauguration of 5½-hr. schedules between Chicago and St. Louis on June 2 by the Wabash, the Illinois Central, the Alton and the Chicago & Eastern Illinois and the construction of new trains by the Alton and the Illinois Central are likewise contributing to the interest in railway service, while the placing in service of the Union Pacific's Streamliner—City of Portland—on June 6 on a schedule of 39 hr. 45 min. between Chicago and Portland indicates the progress that is being made in the improvement of transportation in the West.

While the campaign has only been under way a short time, results have already begun to appear. Several railroads have reported increases of 15 to 50 per cent in passenger traffic, while the number of inquiries for travel information is 50 per cent greater than last year, indicating a heavy movement of traffic during the next few months. Railroad Week is catching the public's interest and promises to be of unusual value from a publicity standpoint.

Odds and Ends . . .

Sun-Dial

What must be one of the largest sun-dials in the world is laid out in the station park of the Santa Fe at Dodge City, Kan. The "face" of the sun-dial is some thirty feet in diameter, the time indications being whitewashed stones set in the grass, and the pole which casts the shadow is 15 ft. high.

Beau Brummel

John S. Hill, conductor for the Chicago & Eastern Illinois, was always known as the dude of his railroad. It was not until after his recent death, however, that the extent of his wardrobe came to light. His estate consisted, among other things, of 600 ties, 105 mufflers, 42 pairs of shoes, 54 pairs of gloves, 27 hats, 85 shirts, 7 suits, 7 overcoats and 100 collars.

Perfect 300

George H. Maenner of the general auditor's office of the Missouri Pacific at St. Louis, claims to be the only railroader ever to roll a perfect 300 score in bowling league competition. If memory serves us correctly, there was once a Louisville & Nashville man who did the same thing, but the record of his achievement has not yet been dug from the archives.

Dangerous Rabbit

The Northern Pacific station at Carrington, N. D., was set on fire recently and burned down by a means unusual if not absolutely unique. It was set on fire by a rabbit. It happened that section men were burning grass in a field nearby and the rabbit's tail was set on fire. The rabbit dove under the station building and into a skunk's nest, setting fire to that and the building as well. Incidentally, one wonders if this is the only case on record of skunks nesting under a railway station.

Cross-Haul

Passenger trains from the Twin Cities to Duluth meet each other in opposite directions, one going due east, the other due west, between St. Paul and Minneapolis. This is brought about by reason of the fact that the Northern Pacific trains start at Minneapolis and run through St. Paul to Duluth, while the Great Northern trains start in St. Paul and run through Minneapolis to Duluth. Moreover, tickets of either road are good on the other, since a pooling arrangement is in effect on these runs.

The Northern Pacific is involved in a similar case with the Chicago, Milwaukee, St. Paul & Pacific in Montana, where for several miles the railroads are parallel and trains from the east to the Pacific northwest run north on one road and south on the other.

Another instance of this is in Maryland between Baltimore and Washington. B. & O. trains from the West to the East operate northbound between these two cities, while corresponding Pennsylvania trains operate southbound, and vice versa. One may go from Washington to Baltimore on a B. & O. train from Chicago or on a Pennsylvania train bound for Chicago.

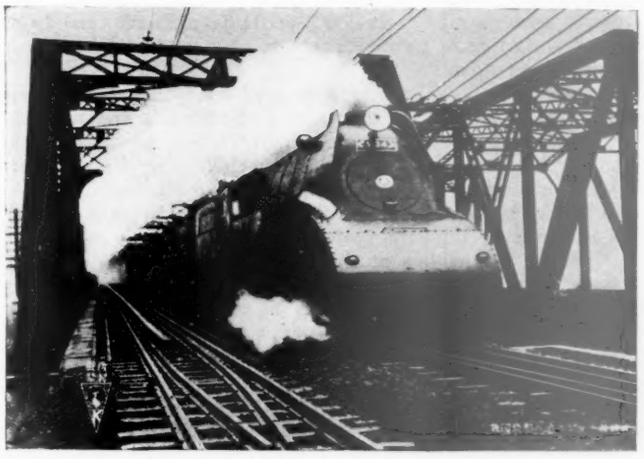
The Panama Railroad, however, is unique in the matter on unusual directions. That line actually runs east from the Atlantic Ocean to the Pacific and vice versa.

Morning Tea Served British Train Tourists

Morning tea in bed, brought to your room by the steward, is a new English note introduced by the London & North Eastern Railway on "The Northern Belle" train cruises leaving London in May and June. These cruises combine railway, motor coach and steamer trips through the English Lake district. The train is the hotel throughout the tour and the accommodations include a lounge salon, offices, buffet, hair-dressing salon, barber shop, shower baths and the morning cup of tea.

Japanese Version of Streamlining

The accompanying illustration shows Japan's first streamlined locomotive. It is a rebuilt C-53 Pacific type, and the only three-cylinder locomotive in Japan. It was converted in 16 working days, at a cost of about $800.



Japan's Only Streamlined Locomotive

Communications and Books . . .

Another Advocate of Toll Gates on Highways and Waterways

NEW YORK

TO THE EDITOR:

I have read with intense interest the sensible proposals made by the very distinguished railway credit specialist, John Pease Norton, in your issue of March 23rd last. I heartily approve of each and all of his proposals as most likely to solve the problem of taxing all other methods of transportation other than railroads, including every means from airplanes to boats and motor trucks.

The further proposal of Mr. Norton to lift the burden from real estate and place it on those directly benefited is both sound and practical, if done in the manner pointed out by Mr. Norton. He clearly tells us just how this can be done.

I sincerely hope *Railway Age* will follow this important matter up and use its influence to see that these valuable proposals get somewhere in the public interest. So many of our better men hesitate to come forward because they feel it is useless. I feel we owe a debt of thanks to Mr. Norton for offering his considered opinion based on his long experience.

GIBSON ARNOLDI.

A Friend of the Diesel Speaks

CHICAGO

TO THE EDITOR:

Mr. Binkerd's defense of the steam locomotive at the recent meeting of the New York Railroad Club was very interesting, particularly in the number of straw men that he demolished. His major thesis appeared to be high-speed passenger service; he was disturbed by the "alleged" high-speed streamlined articulated trains, the development of which he placed to the credit of the "Diesel people."

It is my understanding that this development was originated by railroad officers and completed with the assistance of car builders. High speed, regardless of the type of the train, is determined by the horsepower. Whether the horsepower shall come from a central power station, a Diesel engine or a steam engine is a question of economics. Any horsepower required is possible from any of the three sources, so far as engineering is concerned.

For any type of service, whether passenger, main-line freight or switching, there is a definite maximum horsepower requirement at a definite speed. Granting this horsepower, the comparison of the characteristics of Diesel and steam power should be that the Diesel tractive force increases at slow speeds rather than, as is commonly stated by steam advocates, decreases at high speeds. In passenger service this favorable Diesel characteristic is of little value as it will take as much Diesel horsepower to produce tractive force at high speed as steam horsepower, and the extra tractive force available at low speeds is of value mainly in smoother starting of trains. The best type to choose is again a question of economics.

However, in this discussion passenger service seems relatively unimportant as the main competitors of railroads are, and will increasingly be, aeroplanes, buses, and private motors. The railroads' bread and butter must come from freight service and there is where the steam locomotive will have to put up its fight. As admitted by Mr. Binkerd, and confirmed by Mr. Ennis, the Diesel has a distinct advantage in switching, it being possible to perform the same service with a much lower indicated horsepower with a Diesel engine than with steam.

In through freight service this advantage is again of importance. The controlling horsepower required through freight service is generally at from 15 to 20 m.p.h. on the long ruling grades. In order to produce the tractive force required for these grades it is usually necessary for a steam locomotive to have more indicated horsepower than is required for top train speed. Therefore, a Diesel locomotive of less maximum horsepower can duplicate the service of a steam locomotive of greater indicated horsepower. This advantage is so pronounced that frequently the Diesel will duplicate the performance of a road steam locomotive and pusher.

In all Mr. Binkerd's comparisons of initial costs he matched one steam locomotive with one Diesel locomotive. It is the contention of Diesel locomotive builders that, owing to their inherent characteristics, these locomotives will perform more service in a year than a steam locomotive is capable of, and that the only correct comparison of capital charges is on the basis of ton-miles moved. If their belief in this is incorrect, then there is much in favor of Mr. Binkerd's position. However, time will have to prove its correctness, of which they have no doubt.

Mr. Binkerd also, in his general statement of capital comparison, overlooks the very expensive auxiliaries required for steam power, such as water stations, coaling stations, ash pits, turntables, etc., which are not required with Diesel power and can be eliminated with a complete application to any engine division.

Mr. Binkerd's somewhat fantastic curves on Diesel engine maintenance were completely answered by Mr. Ennis and any unprejudiced investigation on roads or industries that have a sufficient fleet of Diesel power to have accurate records will show that these maintenance costs do not materially increase over a period of years. I believe the maintenance figures of the Canadian National, Illinois Central, American Rolling Mill Company, and Bush Terminal, all of which have had five or more Diesel locomotives for five to ten years, will show a very flat maintenance curve and in the case of the Canadian National, which has had the greatest number the longest time, show a descending curve.

Of course, there are high spots about every two years, but the average for five-year periods will be fairly constant. When we talk about the long life of a steam locomotive we all know that after twenty years there is practically none of the original machine left. If the same shortsighted treatment of obsolescence should be applied to Diesel power, the same results could be obtained.

I was impressed by Mr. Binkerd's fear of the increase in the cost of oil, and his assurance that coal was going to remain cheap for generations, particularly when he advocated, as a competitor for the Diesel engine and as an answer to the railroad problems, an automatic *oil-fired* steam locomotive that was going to use the same fuel as the Diesel.

I was also interested in a statement from the floor about the high-speed Canadian Pacific train between Montreal and Toronto. I, having spent some twenty years on the old Grand Trunk, cannot resist the temptation of pointing out that this train was run by the Canadian National and not the Canadian Pacific.

L. G. COLEMAN,
Manager, Locomotive Department,
Ingersoll-Rand, Inc.

New Book

Proceedings of the American Railway Bridge and Building Association for 1934, 202 pages, 6 in. by 9 in. Bound in cloth. Published by the Association, 319 North Waller avenue, Chicago. Price $2.

Following its convention in 1930, the Bridge and Building Association held no meeting until October, 1934, so that the present volume comprises the first issue of the proceedings in four years. The style, makeup and subject-matter follow the precedent of previous years, but with 10 committee reports, in addition to a paper by C. C. Westfall, engineer of bridges of the Illinois Central, on the power tools used in the construction of the Bonnet Carre spillway structures, and several addresses, the present volume covers a wide range of subjects. Problems of the bridge and building officer discussed in the committee reports include: Maintenance of Ballast Deck Trestles, Guard Rails on Bridges, Brush and Spray Painting, Specialized vs. General Gangs, Relative Economy of Various Culvert Materials, High-Early-Strength Concrete, Safety Measures, Lessons from the Depression, Electric Pumping Equipment and Programming Work.

News Department begins on next left-hand page

NEW POWER

In the purchase of motive power the real problem is the selection of power that best meets your particular transportation needs.

A complete analysis will show the steam locomotive completely fills every requirement and can be purchased cheaper than any other form of motive power.

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NEWS

Supreme Court Finds N.R.A. Codes Invalid

The decision of the Supreme Court of the United States on May 27 holding the code-making provisions of section 3 of the national industrial recovery act to be unconstitutional, followed by the N.R.A. announcement that all methods of compulsory enforcement of the codes would be immediately suspended, contains many important implications for the railroads. The law under which the N.R.A. has been functioning was not applied to the railroads, because they were already so completely regulated under other laws but it was applied to their bus and truck competitors and also to most of the industries from which they purchase materials and supplies, with the effect that they estimated for the recent rate advance case before the Interstate Commerce Commission that the cost of their purchases as a result of code provisions had been increased some $137,000,000 a year. The fact that industrial wages had been advanced under codes also had an effect on the negotiations which resulted in the restoration of the 10 per cent wage cut.

The court held, by a unanimous decision, that under the provisions of the law "the discretion of the President in approving or prescribing codes, and thus enacting laws for the government of trade and industry throughout the country, is virtually unfettered," and that "we think that the code-making authority thus conferred is an unconstitutional delegation of legislative power." It also said: "We are of the opinion that the attempt through the provisions of the code to fix the hours and wages of employees of defendants in their intrastate business was not a valid exercise of federal power," and, in conclusion, that "on both the grounds we have discussed, the attempted delegation of legislative power, and the attempted regulation of intrastate transactions which affect interstate commerce only indirectly, we hold the code provisions here in question to be invalid and that the judgment of conviction must be reversed."

The N.R.A. law as it now stands expires on June 16 and Congress has been struggling for some time with efforts to frame a statute for continuing it. In the light of the decision it was stated by Congressional leaders that it would be necessary to rewrite the statute or allow the N.R.A. experiment to expire. There was some belief that it would be possible to rewrite the law in such a way as to prescribe valid standards setting limits to the exercise of the President's discretion and to limit its application to interstate commerce.

Donald R. Richberg, chairman of the National Industrial Recovery Board, issued a statement saying that according to the opinion of the Supreme Court, the Congress did not sufficiently define in the law the policy and standards of "the wise and beneficent measures which we have undertaken," and that "this decision of the court makes codes of fair competition unenforceable as a matter of law; and in deference to that ruling all methods of compulsory enforcement of the codes will be immediately suspended." However, pending the determination of the question as to what may be done, he expressed the hope that all employers heretofore operating under approved codes and all their employees will "co-operate in maintaining those standards of fair competition in commercial and labor relations which have been written into the codes."

It is understood that the codes adopted for the bus and truck industries and the setting up of national and state code authorities therefor, have had some effect in the way of stabilizing competition, although they have not been effective in maintaining minimum rates. Representatives of the American Trucking Associations, Inc., had appeared before the House committee on ways and means last week to urge an extension of the N.R.A. legislation for two more years but there has already been an indication that the influence of the trucking code authority was lessening in the fact that to the end of last week it had succeeded in obtaining registration of only 77,082 trucks, or 25.5 per cent of last year's total registration.

In addition to the codes for industries from which the railroads purchase such general materials as coal, oil, lumber, iron and steel, etc., there were codes for various branches of the industries manufacturing materials and supplies especially for railroad use, such as cars and locomotives, locomotive appliances, special track equipment, railway and industrial springs, railway appliances, railway brass car and locomotive journal bearings and castings, railway car appliances, chilled car wheels, safety appliances, steel tires, etc.

"Century of Progress" on 5½-Hr. Schedule

The Chicago & Eastern Illinois, on June 2, will place its "Century of Progress" on a 5½-hr. schedule between Chicago and St. Louis, Mo. The train will leave Chicago at 12:15 p. m. instead of 11:25 a. m. and will arrive at St. Louis at 5:45 p. m. instead of 5:55 p. m. Returning, it will leave St. Louis at 12:25 p. m. instead of 12:04 p. m. and will arrive in Chicago at 5:55 p. m. instead of 6:34 p. m.

Railroad Pensions May Be Governed by Social Security Bill

After careful consideration of the questions involved, the Department of Justice announced on May 25 that it had determined not to file with the Supreme Court a petition for rehearing of the railroad retirement case, pointing out that in an elaborate brief, and also in oral argument, the government fully discussed each point in the case. Every phase of the case and every issue of fact and law urged by the government, or which has been emphasized by others interested, was fully considered and discussed by the court in both the majority and minority opinions. There have been brought to the attention of the department no new issues which could be presented to the court; and to the contentions made by the government in brief and in argument it is believed that nothing could be added.

In view of the receipt of numerous letters and telegrams from individuals and organizations, and in view of the general public interest expressed in the case, the Department of Justice deemed it proper to make this announcement.

The railroad labor executives are pressing a slightly revised substitute for the railroad retirement act, which would provide special treatment for railroad employees, but in the absence of such special legislation railroad pensions would be placed on the same basis as those in other industries if Congress finally passes (and if the courts sustain) the social security bill, which President Roosevelt has asked for as one of the most important features of his legislative program. The bill has been passed by the House and is now on the Senate calendar, having been favorably reported by the Senate committee on finance, with some changes. As the bill was originally planned, an exemption was made of railroads, but as passed by the House and as reported to the Senate it applies to all employees except specified classes such as agricultural labor, domestic service, casual labor, government employees and employees of institutions not operated for profit. Similarly the bill provides for systems of unemployment compensation for all industries and a federal tax on employers for the purpose, although the systems would be operated by the states.

The bill provides for a federal old-age benefit plan, to be administered by a federal Social Security Board, and the payment of cash benefits to individuals who attain the age of 65 proportionate to the total amount of wages received for employment before the age of 65. The funds are to be provided by a federal income tax on employees, beginning at 1 per cent of the

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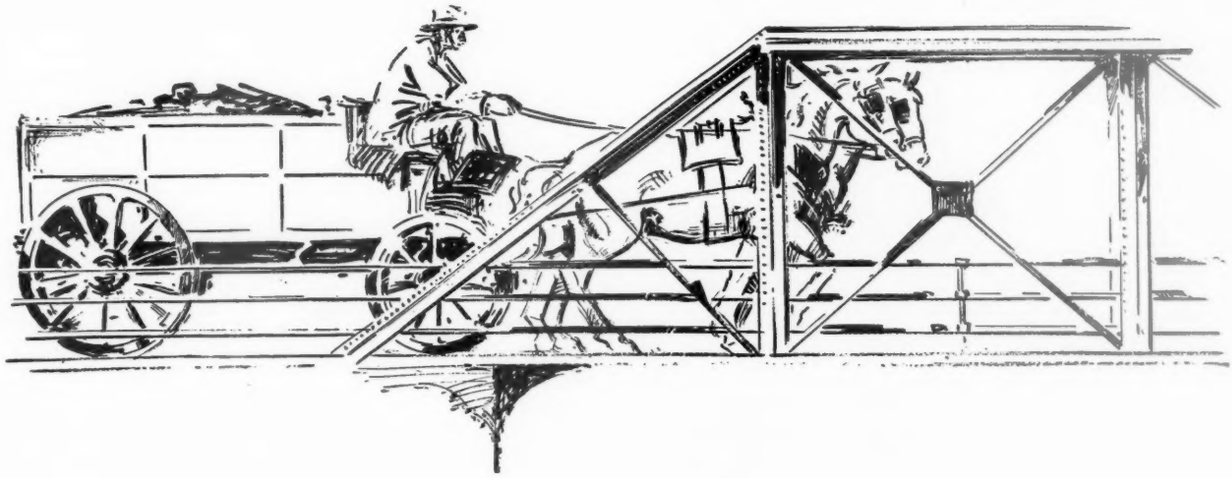


"WALK YOUR HORSES OR"----

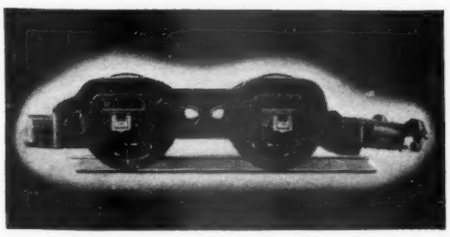
Remember the signs on bridges years ago that made slow motion mandatory?

A sound reason back of the order—rapidly pounding hoofs increased the shock load on the bridge—piled up maintenance costs.

It is the same way with a heavy train. Bunching the slack multiplies the shocks by the number of cars in the train and increases maintenance costs for both locomotive and cars.

The Locomotive Booster avoids the need of taking slack. The added power the Booster brings permits a smooth rapid start under all conditions.

By capitalizing idle weight and spare steam the Booster takes the locomotive out of the class of shock producers and makes it a modern power unit.



Franklin repair parts use jigs and fixtures that insure interchangeability, long life and dependability of service. Genuine Franklin parts are a guarantee of maximum trouble-free service.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

wages for 1937 and increasing to 3 per cent for 1949 and subsequent years, to be collected by the employer by deduction from wages, and a similar tax on the employers. Compensation in excess of $3,000 a year is not to be counted as wages. The old-age benefits are to range from a minimum of $10 to a maximum of $85 a month and are to be first payable in 1942. The monthly benefit payment is to be based on ½ per cent of the total wages for the first $3,000 of total wages received after December 31, 1936, 1/12 per cent of the next $42,000 and 1/24 per cent of all over $45,000. If an individual dies before age 65 his estate receives a payment equal to 3½ per cent of his total wages received after December 31, 1936. The plan is apparently intended to supersede existing voluntary pension plans, although there would be a considerable period before the new plan becomes effective. The scale of benefits proposed is less than that asked by the labor organizations and even less than that of the railroad retirement act, which provided a maximum of $120 a month. Some railroad pension plans allow as much as $150 a month, and the average pension paid by the railroads in a recent year was $753 for the year.

The bill also provides for a federal tax on employers to provide for the unemployment compensation ranging from 1 per cent for 1936 to 3 per cent in 1938 and thereafter, so that the total tax imposed on employers by the bill would eventually be 6 per cent, or more than the 4 per cent provided for initially in the railroad retirement act.

The Comptroller General of the United States has issued a ruling that the Railroad Retirement Board went out of existence on May 6, the day the Supreme Court of the United States rendered its decision that the railroad retirement act was unconstitutional, and that none of the money in its possession might be used for winding up its affairs. The money was provided by a voluntary contribution by the railroads. In requesting a ruling, Murray Latimer, chairman of the board, pointed out that it had accumulated a large volume of records in connection with the applications filed with it, including many documents of importance to the individual applicants relating to the proof of their age, which should be returned to them.

"It must follow from the decision of the Supreme Court of the United States in this matter," Comptroller General McCarl said, "that the board and its employees have no lawful existence as such and hence there is no authority for the members of the board or its employees to be paid from the fund in question any salaries, etc., and also that there is no authority for the board or its employees, as such, to perform any function whatsoever. The fund involved must remain in the 'railroad retirement fund' until otherwise directed by Congress."

Business Association to Hold Mid-Year Meeting

Because of many requests for a mid-year meeting, the Railway Business Association has arranged for two meetings, one for the eastern group and another for western members. That for the eastern group will be held in the West Ballroom of the Commodore Hotel, New York, on June 7, at 12:30 p. m., when the members will be the guests of the Executive committee and the Governing Board, while that for the western members will be held under the same auspices in the Florentine Room of the Congress Hotel, Chicago, on June 14, at 12:30 p. m. Both meetings will be co-ordinated through the presence of the Executive committee and the Governing Board. The meetings will be devoted to a discussion of the railroad situation, the conditions within the railway supply industry and the work of the association during the past six months.

Arthur H. Young Awarded Gantt Medal

The Henry Laurence Gantt Medal for 1935 was awarded to Arthur H. Young, vice-president in charge of industrial relations of the United States Steel Corporation, at a dinner meeting of the Institute of Management, held at the Hotel Pennsylvania, Friday evening, May 24. The medal board is composed of three representatives each from the Institute of Management and the American Society of Mechanical Engineers. The award was made "for outstanding and creative work in the field of industrial relations." Clarence J. Hicks, of Industrial Relations Counsellors, Inc., told of the important part that Mr. Young has played in bringing about better relations between employees and employer. The presentation of the medal was made by Harold V. Coes, of Ford, Bacon & Davis, Inc., and chairman of the award committee.

Net Deficit for Two Months, $40,423,443

The 149 Class I railroads have reported to the Interstate Commerce Commission a net deficit of $40,423,443 for the first two months of 1935, after deductions for fixed charges, rentals, etc., and before depreciation and retirements. This compares with a net deficit of $25,904,744 for the corresponding period of last year. Before depreciation and retirements the net deficit was $8,316,350, as compared with a net income of $5,686,124 for the corresponding period of last year. The commission's summary of selected income and balance-sheet items for the two months is shown in the accompanying table.

For the first three months of the year the net deficit after depreciation and retirements was $45,450,054. Before depreciation and retirements there was a net income of $2,837,989. For the month of March there was a net income before depreciation and retirements of $11,278,938.

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 143 reports (Form IBS) representing 149 steam railways
TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of February 1935	For the month of February 1934	Income Items	For the two months of 1935	For the two months of 1934
$25,719,920	$29,420,777	1. Net railway operating income	$47,047,398	$60,479,056
12,243,771	12,158,164	2. Other income	24,835,500	25,896,251
37,963,691	41,578,941	3. Total income	71,882,898	86,375,307
10,859,250	10,988,370	4. Rent for leased roads	21,784,591	21,941,714
43,381,493	43,204,846	5. Interest deductions	86,905,555	86,803,559
2,151,206	1,735,133	6. Other deductions	3,616,195	3,534,778
56,391,949	55,928,349	7. Total deductions	112,306,341	112,280,051
		8. Net income:		
d18,428,258	*d 14,349,408*	8-01. After depreciation and retirements	*d 40,423,443*	*d 25,904,744*
d 2,449,269	1,307,861	8-02 Before depreciation and retirements	*d 8,316,350*	5,686,124
		9. Dividend declarations (from income and surplus):		
12,523,950	13,167,177	9-01. On common stock	15,013,709	16,060,318
2,853,628	2,914,778	9-02. On preferred stock	3,295,850	3,296,100

BALANCE-SHEET ITEMS

	Balance at end of February 1935	Balance at end of February 1934
Selected Asset Items		
10. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$792,909,420	$744,080,227
11. Cash	325,550,821	295,294,637
12. Demand loans and deposits	12,584,949	36,827,296
13. Time drafts and deposits	32,702,249	48,236,558
14. Special deposits	68,162,963	31,336,729
15. Loans and bills receivable	5,140,676	7,477,728
16. Traffic and car-service balances receivable	54,633,639	52,069,375
17. Net balance receivable from agents and conductors	44,442,508	44,453,226
18. Miscellaneous accounts receivable	144,367,220	137,905,851
19. Materials and supplies	300,027,943	295,149,336
20. Interest and dividends receivable	45,042,616	40,585,993
21. Rents receivable	3,002,238	2,122,407
22. Other current assets	10,696,807	4,366,300
23. Total current assets (items 11 to 22)	1,046,354,629	995,852,436
Selected Liability Items		
24. Funded debt maturing within 6 months*	$234,038,165	$266,574,919
25. Loans and bills payable†	318,740,544	335,957,454
26. Traffic and car-service balances payable	69,919,301	66,364,246
27. Audited accounts and wages payable	207,030,880	204,153,229
28. Miscellaneous accounts payable	84,222,125	46,280,250
29. Interest matured unpaid	321,987,313	235,834,014
30. Dividends matured unpaid	4,630,567	4,638,583
31. Funded debt matured unpaid	278,760,041	111,277,937
32. Unmatured dividends declared	17,296,056	17,296,091
33. Unmatured interest accrued	109,695,932	112,893,197
34. Unmatured rents accrued	32,861,396	31,598,571
35. Other current liabilities	23,329,572	16,556,324
36. Total current liabilities (items 25 to 35)	1,468,473,727	1,182,849,896
37. Tax liability (Account 771):		
37-01. U. S. Government taxes	36,021,721	34,592,970
37-02. Other than U. S. Government taxes	128,220,639	140,619,191

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within 6 months after close of month of report.
† Includes obligations which mature less than 2 years after date of issue.
d Deficit.

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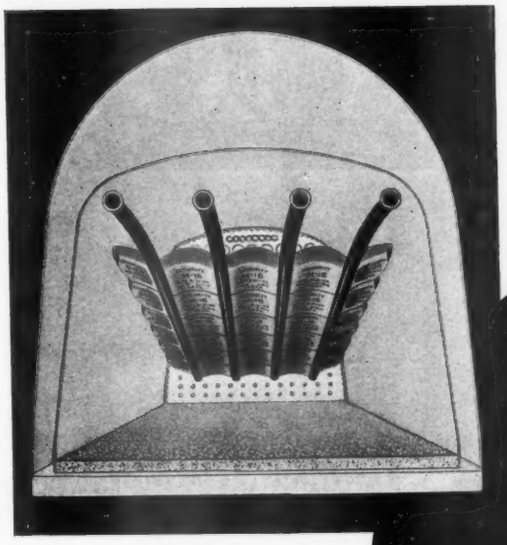


ONLY

A COMPLETE ARCH *Gives* MAXIMUM ECONOMY

The Security Arch is carefully proportioned to meet the requirements of the firebox design.

These proportions have been carefully studied and repeatedly tested by American Arch Company Combustion Specialists.

Properly installed the Security Sectional Arch insures maximum boiler capacity and minimum fuel consumption.

To maintain this fuel economy be sure a complete Security Arch is applied at every boiler wash.

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

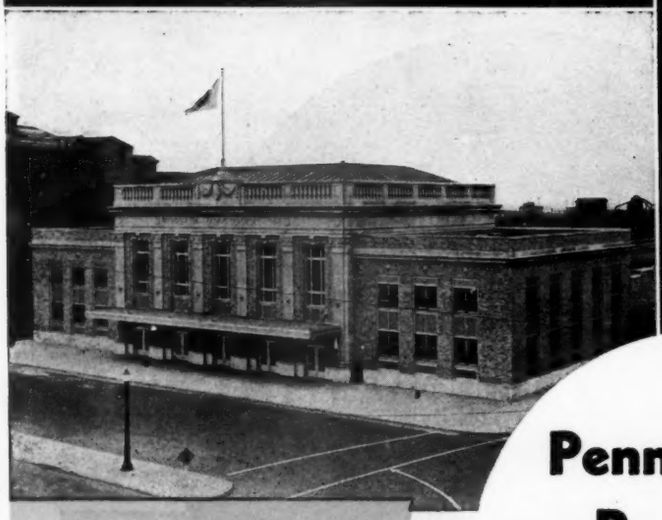
NRA MEMBER U.S. WE DO OUR PART

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

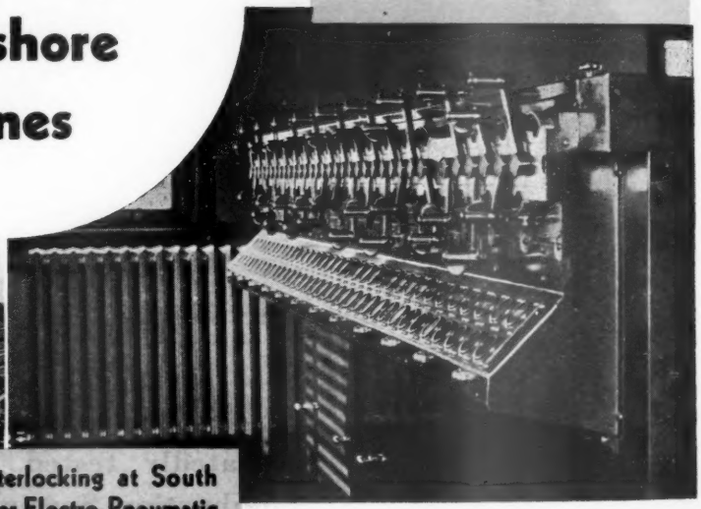
UNIFICATION

Pennsylvania Reading Seashore Lines

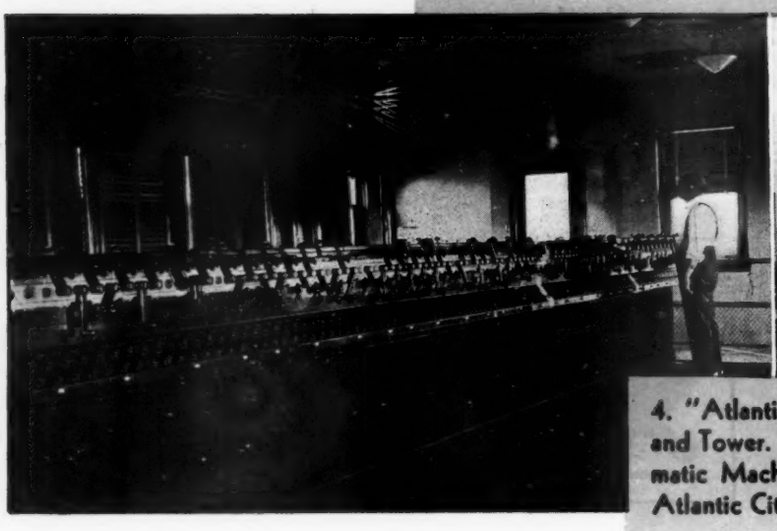


1. New Atlantic City Station

2. "Alan" Interlocking at Federal St. Terminal, Camden. 75-lever Electro-Pneumatic Machine.



3. "Brown" Interlocking at South Camden. 35-lever Electro-Pneumatic Machine. Tower at left, machine at right.



4. "Atlantic" Interlocking Machine and Tower. 111-lever Electro-Pneumatic Machine. Located near new Atlantic City Station.

for More Efficient Transportation

JUSTIFICATION for, and the wisdom of, the consolidation of the signal and interlocking facilities of the Seashore Lines of the Pennsylvania and Reading Railroads is best demonstrated by the fact that, under the unified arrangement, five modern "Union" Electro-Pneumatic Interlocking Plants replace twenty-five old plants, and that standardizing on "Union" Coded Continuous Four Indication Cab Signals permits interchange of equipment and unit operation on the two main lines from Camden to Winslow Junction and thence to Atlantic City.

These changes will bring about more expeditious, efficient and economical transportation and improve the already good relationship between the unified Seashore Line and its customers.

"Union" engineers are at your service in connection with any signaling or traffic problem. Consult our nearest district office.

5. Signal Bridge at Camden, looking toward Terminal.

6. The Four Indication Coded Continuous Cab Signal.

7. Scene near Camden on the Seashore Line.

947

1881 **Union Switch & Signal Co.** 1935

SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Railroad Reorganization Bill

Senators Moore and Barbour, of New Jersey, have introduced in the Senate a bill, S. 2906, to provide for exclusive jurisdiction of district courts sitting in equity over reorganizations of railroads and to vest special authority in the Interstate Commerce Commission relating thereto.

Central Railway Club

The Central Railway Club of Buffalo (N. Y.) will hold its next meeting on Monday evening, July 1, on the Steamship Juniata, the boat leaving the G. L. T. dock at the foot of Main street, Buffalo, at 5:30 p.m., Daylight Saving Time, and returning at midnight. This will be the fifth annual cruise of the club. The tickets, at $2.50 each, include a cruise on Lake Erie, dinner, dancing and entertainment.

Correction

Under the schedule of the Blackhawk of the Chicago, Burlington & Quincy, which becomes effective on June 2, the train will leave Chicago at 8 p. m. instead of 6:30 p. m. and will arrive in St. Paul, Minn., at 7:05 a. m. and at Minneapolis at 7:45 a. m. as at present, the arrival time having been incorrectly reported in the *Railway Age* of May 18.

I.C.C. to Investigate Failure of State Commissions to Allow Surcharges

On petitions filed by the railroads, the Interstate Commerce Commission has ordered investigation proceedings as to the failure of the state public service commissions of Georgia and Indiana to authorize or permit the intrastate application of the emergency increases in freight rates authorized for interstate traffic in Ex Parte No. 115.

President's Transportation Message Again Postponed

The President's long-promised message to Congress on transportation legislation has again been postponed to next week, it was stated at the White House following the Supreme Court decision on Monday in the N. R. A. case, because of the amount of attention it would be necessary to give to planning for a future course to meet the court's decision. The President stated recently that he had practically written the message, but it was delayed by the maneuvers incident to the defeat of the bonus bill.

Last Passenger Train on B. & A. Branch Carries Railroad Enthusiasts

Several members of the Railroad Enthusiasts, Inc., a national organization of persons interested in railroads as a hobby, made a trip on May 26 on the last passenger train to be operated over the Athol branch of the Boston & Albany. This branch, extending from Springfield, Mass., to Athol, was built as a separate railroad known as the Springfield, Athol & Northeastern. It is now to be abandoned because its right-of-way is within territory to be flooded by a reservoir being constructed in connection with the development of the Boston water supply. Train service on the branch has recently consisted of one mixed train daily. The May 26 trip of the Railroad Enthusiasts group was made on a special train which ran from Springfield to Athol, thence over a short stretch of the Boston & Maine to Baldwinville and then down the Ware River branch of the Boston & Albany to Palmer and back to Springfield, a distance of approximately 115 miles.

Hiawatha Placed in Regular Service

With christening ceremonies and a radio broadcast, the Hiawatha, of the Chicago, Milwaukee, St. Paul & Pacific, was placed in regular service between Chicago and the Twin Cities on May 29. During the half-hour before departure, Jeannie Dixon, daughter of W. B. Dixon, general passenger agent, christened the train, and H. A. Scandrett, president, and E. J. Kelly, mayor of Chicago, delivered dedicatory speeches. These events, together with music and singing by the "Westerners" and the sound of the departing train, were broadcast from the Union station at Chicago over station WLS. At Minneapolis, Minn., appropriate ceremonies likewise were held on the departure of the corresponding train southbound, the mayor of that city participating.

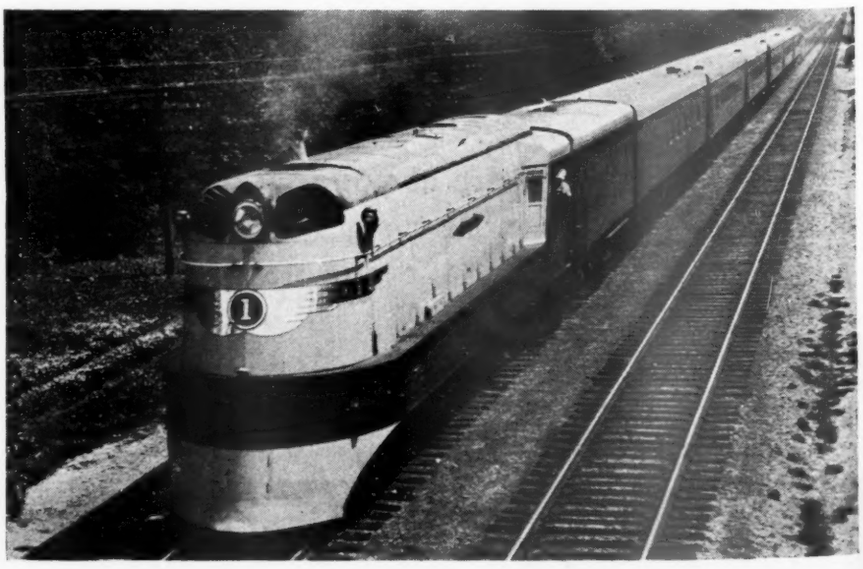
For four weeks prior to May 29, the trains were operated in test runs and were exhibited at key cities where 138,310 persons passed through them. On May 24, one of the trains was used by the Traffic Club of Chicago to carry 259 of its members to Milwaukee, Wis., for a joint luncheon with the Traffic Club of that city. The train left Chicago at 11:30 a.m. and arrived at Milwaukee at 12:39 p.m., having covered the 85 miles in 69 min. For the 20 miles between Deerfield, Ill., and Mayfair on the return journey, the train traveled at 106 to 108 miles per hour. At the luncheon in Milwaukee, H. A. Scandrett, president of the railroad, discussed the purpose of the train, while Norman C. Naylor, vice-president of the American Locomotive Company, explained the properties of the new locomotive and the value of steam power in maintaining the high speeds being demanded by the public.

In announcing the Hiawatha to the public, advertisements are being published in 70 newspapers throughout the country. In Chicago, Milwaukee, Minneapolis and St. Paul, full-page color advertisements are being used, while in other cities half-page and 600-line announcements are employed. In some cities follow-up copy is being run. In addition, local magazines are being used in key cities and distinctive direct mail pieces are being sent to business men and ticket agents. This is, according to reports, the second time a railroad has used color in regular newspaper advertising and the first time it has been used on such an extensive basis.

In arranging the schedule of the Hiawatha, several factors were taken into consideration. A study of traffic requirements established 12:30 p.m. departure from Minneapolis and 7:30 p.m. arrival at Chicago and 1 p.m. departure from Chicago and 8 p.m. arrival at Minneapolis. Stops arranged at Milwaukee, Wis., Portage, New Lisbon, LaCrosse, Winona, Minn., and St. Paul, likewise, were the result of study. The stop at Milwaukee protects north and south traffic to and from that point, while that at Portage affords connections with service to and from Madison, Wis., Janesville and Beloit and vicinity. The New Lisbon stop affords connections with the Valley division line and to Northern Wisconsin resorts, while the stops at LaCrosse and Winona serve business at those points. With these stops, the schedule of the train averages 63.1 miles per hour for the entire distance of 509.9 miles between Chicago and St. Paul. For the 85 miles from Chicago to Milwaukee, the average is 68 miles per hour and for the 43.1 miles between New Lisbon and Portage 74 miles per hour. Between stops the trains operate at speeds of 80 to 90 miles per hour.

I.C.C. Report on Terminal Services

The Interstate Commerce Commission on May 28 made public a report in connection with Part II of its investigation



Hiawatha Now In Regular Service

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HERE'S ONE SURE WAY THAT RAILROADS CAN *Save Money!*

Standardize on NATIONAL Scale Free Pipe for locomotives and cars! This will eliminate frequent interruptions to service on account of repairs and replacements, due to corrosion, or to clogged up airbrake lines, etc. The clean, smooth surfaces of this pipe have no scale to break off and start these troubles because the NATIONAL Scale Free Process (applied to butt-weld sizes ½ to 3-inch) eliminates the scale. This process was developed by National Tube Company and has made NATIONAL the outstanding pipe value for railway service. Read the 5 outstanding advantages listed to the left, they sum up the reasons why this pipe gives assurance of longer life, better service, and greater economy. For your next requirements be economical—play safe at the start—insist on NATIONAL—*The Original Scale Free Pipe.*

ADVANTAGES

1. Minimized corrosion—particularly pitting. 2. Better base for galvanizing or other protective coatings. 3. Full delivery capacity—less friction loss. 4. No damage to valve seats; no clogging of small orifices. 5. Greater strength at the weld —due to the extra rolling in the process.

All National Galvanized Pipe is given a special chromate treatment to resist discoloration and the formation of white rust. This patented process preserves that smooth glistening surface or metallic lustre which is characteristic of good galvanizing.

NATIONAL TUBE COMPANY • Pittsburgh, Pa.
Pacific Coast Distributors—COLUMBIA STEEL CO., San Francisco, Calif.
Export Distributors—UNITED STATES STEEL PRODUCTS CO., New York, N. Y.

United States Steel Corporation Subsidiary

NATIONAL SCALE FREE PIPE
SPELLERIZED

of practices of carriers affecting operating revenues or expenses, Ex Parte No. 104. This part of the investigation related to terminal services in connection with industries and the commission issued a series of findings that:

1. When a carrier is prevented from performing an uninterrupted service to the points of loading or unloading within the confines of an industrial plant because of some action or disability of the industry or its plant, the carrier's duty with respect to the delivery or receipt of cars does not extend beyond the point of interruption or interference, and any allowance to the industry for performing the service beyond such points or the performance of service by the carrier beyond such points without proper charge is unlawful in violation of section 6 of the act.

2. At many industries delivery and receipt of freight is effected by carriers on interchange tracks because of interference or interruption to the work of both the industry and the carrier which would be encountered beyond such tracks. Under such circumstances, delivery or receipt on such tracks constitutes delivery or receipt under the line-haul rates.

3. When the spotting service at an industry requires a service in excess of that required in making simple placement or the equivalent of team track spotting, such service is in excess of that required of a common carrier under its line-haul rate, and any allowance to the industry for performing such service or the performance thereof by the carrier without charge over and above the line-haul rate is unlawful in violation of section 6 of the act.

4. The payment by respondents of allowances to individual industries for the performance of spotting service at the latter's convenience, or the assignment by respondents of locomotives to perform similar service without charge, dissipates respondents' funds and revenues, to be not in conformity with efficient and economical management as contemplated by the interstate commerce act, and not in the public interest.

First Agency Certificate Awarded by Business Publishers

Roy S. Durstine, acting for the advertising agency, Batten, Barton, Durstine & Osborn, of which he is vice-president, received the first Certificate of Agency Recognition ever awarded by the Associated Business Papers, Inc., at a meeting of 125 representatives and publishers of this association, held at the Lotos Club, New York, May 27. Presentation was made by President Everit Terhune of the A. B. P.

In presenting this certificate, President Terhune expressed the satisfaction of A. B. P. members at the friendliness and spirit of fair play which marked the attitude of this agency toward the business press. Practically every account, whose advertising is handled by his agency, believes in and makes use of business paper space as an essential part of its advertising program, Mr. Durstine said, in accepting the certificate. It is because of this policy, he added, that Batten, Barton, Durstine & Osborn placed more pages of advertising with member publications of the Associated Business Papers than any other agency in the country during each of the past four years.

Approximately 250 other advertising

President Terhune of the A. B. P. Presenting the Certificate to Mr. Durstine

agencies, now meeting requirements of the Associated Business Papers for recognition, are to receive their certificates in the near future.

I. C. C. Declines to Impose Labor Conditions in Trackage Right Case

Following a reargument sought by the Brotherhood of Railway Clerks, the Interstate Commerce Commission has issued a report affirming that previously made by Division 4 authorizing the Chicago Great Western to operate under trackage rights over certain tracks of the Kansas City Southern in and near Kansas City, Mo., without imposing conditions asked by the brotherhood to protect the employment of employees affected. Under the plan each carrier expected to realize savings of approximately $7,200 a year, 16 station employees suffered reductions in their rates of pay, and 10 were deprived of employment.

The brotherhood had argued that the application should have been dismissed because the operation was undertaken primarily without the commission's authorization, and that it was contrary to existing labor agreements under the railway labor act, contrary to that act and to the emergency railroad transportation act, and against the public interest. If the application were granted it asked that conditions be imposed to protect the employees' interests. The commission held that that application did not involve a consolidation or unification of terminals, that it contemplated merely the joint use of the less-than-carload freight station of the K. C. S. on a contract and user basis, that the application was properly filed under section 1(18) of the interstate commerce act rather than under section 5(4), and expressed the opinion that it was without jurisdiction to impose conditions as sought by the brotherhood or conditions similar thereto. Commissioners Porter and McManamy dissented on the ground that conditions should have been attached and Commissioner Splawn, dissenting, held that there was no occasion for the application.

The majority report took the position that resort may not properly be had to the emergency act in this case as the commission's jurisdiction applies only after the co-ordinator has issued an order, and no order was issued by him in connection with the transaction.

I. C. C. Report on Rail-Bus Collision

The Interstate Commerce Commission on May 27 made public the report of W. J. Patterson, director of the Bureau of Safety, on the collision between a passenger train and a school bus on the Baltimore & Ohio at Rockville, Md., on April 11, which resulted in the death of 14 students who were riding in the bus. The conclusions reached are that:

"This accident was caused by a school bus being driven upon a railroad crossing at grade directly in front of a rapidly-approaching train, due primarily to the failure of the driver to take adequate precautions before starting over the crossing, and to inadequate protection of the crossing which resulted from failure of responsible authorities to enforce, and of the railroad company to obey, the law requiring maintenance of a watchman until 12 o'clock midnight."

The following recommendations are made:

1. That responsible authorities take necessary steps to enforce the existing laws, regulations or ordinances regarding protection required to be provided at grade crossings within their respective jurisdictions.

2. That continuous crossing protection be provided permanently at this point, by watchmen, flashing lights, or other visual signal devices to give warning at all times when a train is approaching.

3. That responsible authorities see to it that all holders of contracts for the transportation of students by bus are thoroughly informed and instructed regarding the requirement that all buses must be brought to a full stop at least 25 feet from any grade crossing and that the driver must be sure there is no danger from approaching trains or cars before attempting to drive his bus across the tracks, and then take adequate measures to insure that this requirement is rigidly enforced and obeyed.

4. That front-end construction of motor vehicles should provide the driver with a full view to each side as well as to the front.

5. That, whenever practicable, buses should be routed so as to avoid grade crossings which are not protected by watchmen, or devices to give visual warning at all times when a train is approaching.

"The evidence developed as a result of the investigation of this accident clearly shows that there is no reasonable excuse to be offered for its occurrence," the report says. "Even though the driver did not know anything about the requirement of the school board that he stop before passing over grade crossings, it was his

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duty to take the precautions which every driver should take before entering upon a crossing, and had he done so in this case, or had the protection required by law actually been provided, the accident would beyond reasonable doubt have been prevented. The bus should have been stopped and the driver should have made certain that it was safe to proceed; the railroad company was required by law to maintain a watchman during that part of the day within which this accident occurred, and responsible state or local authorities should have seen to it that this requirement of law was enforced."

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 3400 Empire State Bldg., New York, N. Y.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago, Ill. To meet with Air Brake Association, Car Department Officers' Association, International Railroad Master Blacksmiths' Association, International Railway Fuel Association, International Railway General Foremen's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 816 McCormick Bldg., Chicago, Ill. Annual meeting, September 17, 1935, Toronto, Ontario, Canada.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo. Annual meeting, June 18-20, 1935, Hotel Sherman, Chicago, Ill.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill. Annual meeting, January 17-18, 1936.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago, Ill. Annual meeting, October 15-17, 1935, Clift Hotel, San Francisco, Cal.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago, Ill. Annual meeting, October 15-17, 1935, Hotel Stevens, Chicago, Ill. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—E. H. Gurton, Mgr., Land Settlement and Development, C. N. R., St. Paul, Minn. Next meeting, December 5-6, 1935, Chicago, Ill.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the Association of American Railroads, Division IV.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—John Ferrick, Missouri Pacific Lines Magazine, 2108 Missouri Pacific Lines Bldg., St. Louis, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C. Annual meeting, October, 1935, New Orleans, La.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York, N. Y.

Railroad Division.—Marion B. Richardson, 192 E. Cedar St., Livingston, N. J. Spring meeting, June 19-21, 1935, Hotel Gibson, Cincinnati, Ohio.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York, N. Y. Annual meeting, during week of September 23, 1935, Atlantic City, N. J.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, January 28-30, 1936, Memphis, Tenn.

ASSOCIATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington, D. C.

Operations and Maintenance Department.—J. R. Downes, Vice-President, Transportation Bldg., Washington, D. C.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill. Annual meeting, June 18-20, 1935, Knickerbocker Hotel, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, June 10-11, 1935, Chalfonte-Haddon Hall, Atlantic City, N. J.

Protective Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, June 5-6, 1935, French Lick Springs Hotel, French Lick, Ind.

Safety Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, October 15-16, 1935, Louisville, Ky.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, N. Y. Annual meeting, June 25-27, 1935, Hotel Stevens, Chicago, Ill.

Division II.—Transportation.—G. W. Covert, 59 E. Van Buren St., Chicago, Ill.

Division IV. — Engineering. — E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Construction and Maintenance Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Electrical Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York, N. Y.

Division V.—Mechanical.—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill. Annual meeting, June 26-27, 1935, Congress Hotel, Chicago, Ill.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual meeting, July 23-24, 1935, Chicago, Ill.

Division VII.—Freight Claims.—Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill.

Division VIII.—Motor Transport.—George M. Campbell, Transportation Bldg., Washington, D. C.

Car-Service Division.—C. A. Buch, Transportation Bldg., Washington, D. C.

Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.

Finance, Accounting, Taxation and Valuation Department.—E. H. Bunnell, Vice-President, Transportation Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Chief Clerk and Claim Agent, General Claims, Dept., Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting, 1936, St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., 1519 Daily News Bldg., 400 W. Madison St., Chicago, Ill.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. F. Flanagan, Detroit Graphite Company, Room 1158, 20 N. Wacker Drive, Chicago, Ill. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2276 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 S. Morgan St., Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 S. Main St., Los Angeles, Cal. Club not active at present.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—E. G. Bishop, Illinois Central R. R., East St. Louis, Ill.

CENTRAL RAILWAY CLUB OF BUFFALO.—M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings temporarily suspended.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—T. D. Smith, 1660 Old Colony Bldg., Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, Washington, D. C. Annual meeting, October 15-18, 1935, Nashville, Tenn.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Suite 322, 910 S. Michigan Ave., Chicago, Ill. Exhibit at A. R. E. A. Convention, March 9-12, 1936, The Coliseum, Chicago, Ill.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section (see Safety Section, Association of American Railroads).

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July and August, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco and Oakland, excepting July at Los Angeles and October at Sacramento.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—(Merged with Association of American Railroads.)

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton (Treas. and Asst. Sec.), First National Bank Bldg., Chicago, Ill. Annual meeting, November, 1935, Hotel Stevens, Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago, Ill. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 15-16, 1935, Baltimore, Md.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division, and Motor Transport Division, Association of American Railroads.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R., Division I.

RAILWAY TIE ASSOCIATION.—I. C. Rowe, 2091 Railway Exchange Bldg., St. Louis, Mo.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1428 Broad Street Station Bldg., Philadelphia, Pa. Annual meeting, September 20-21, 1935, Netherland-Plaza Hotel, Cincinnati, Ohio.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 17-19, 1935, Hotel Stevens, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October 5-6, 1935, Cincinnati, Ohio.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November. Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—R. H. Burgess, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, first Friday of each month, except July, August and September, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—D. J. Higgins, Gardner-Denver Company, 332 S. Michigan Ave., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 E. 98th St., Cleveland, Ohio.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

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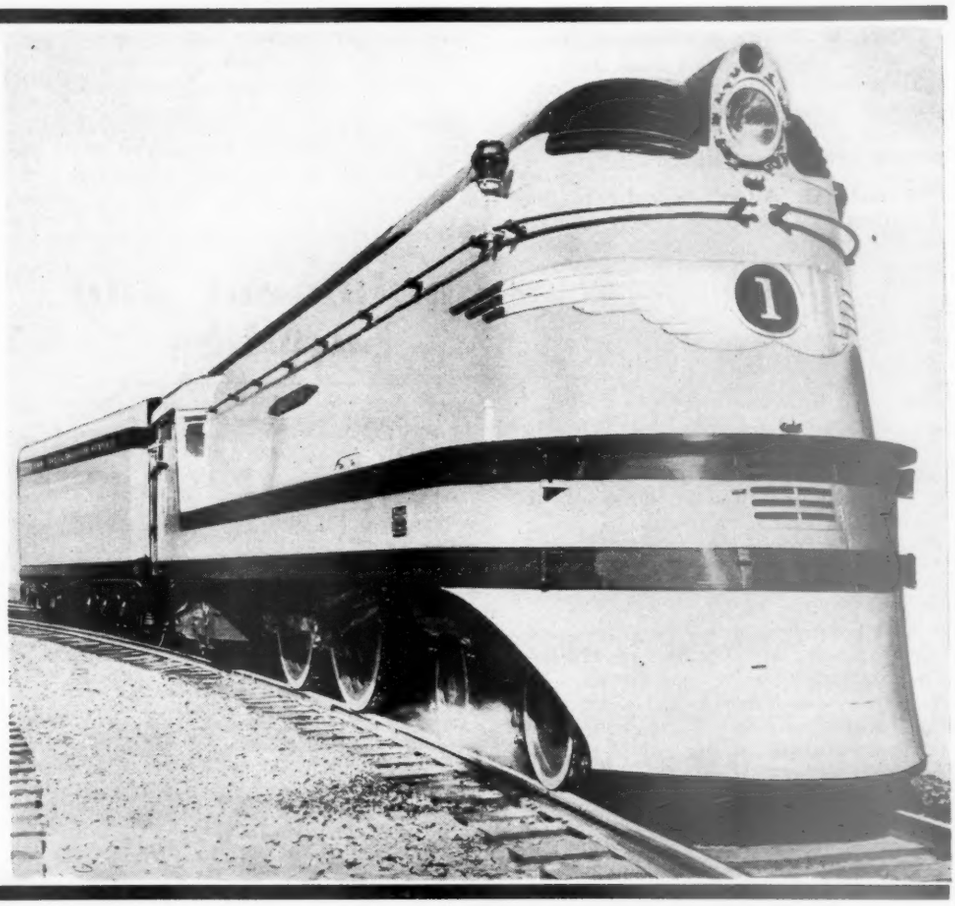
WHY STEAM?



STEAM WAS CHOSEN FOR FIVE VERY SOUND REASONS:

First: We can secure most easily and economically with steam all the speed that any railroad will dare use for many years to come.

Second: The required horsepower will be secured at one quarter of the initial investment of any other choice — a sound economic factor today.

Third: The full horsepower output of the steam unit is available at or near the cruising speed. This is practically essential in high speed work.

Fourth: With the surplus power available under steam the railroad has a flexibility or margin of power which makes it possible to attach more cars when the demand arises.

Fifth: A power unit capable of being maintained and operated with present railway facilities and organization.

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Supply Trade

Harry O. Ames, formerly associated with the Crane Company, Chicago, has been appointed representative of **Rawlplug Company, Inc.,** New York, with headquarters at Oklahoma City, Okla.

Ralph W. Payne, 613 Fifteenth street, N. W., Washington, D. C., has been appointed by the **Cleveland Tractor Company,** Cleveland, Ohio, to represent its railroad sales division on several eastern and all southeastern railroads.

Samuel G. Allen, secretary of the **Superheater Company,** New York, has been elected chairman of the executive committee to succeed **Joel S. Coffin,** deceased, and **Thomas F. Morris,** assistant secretary and assistant treasurer has been elected secretary and assistant treasurer.

Newton P. Selover has been appointed Pacific Coast representative, **Railway Sales Division** of the **Consolidated Ashcroft Hancock Company, Inc.,** subsidiary of **Manning, Maxwell & Moore, Inc.,** New York, succeeding **Fred J. Wilson** who has retired. Mr. Selover's headquarters are at San Francisco, Cal.

A. M. Candy has been appointed consulting engineer on the staff of the **Hollup Corporation,** Chicago, manufacturers of welding wire and supplies and steam railroad distributors for Westinghouse arc welders. He will be engaged in the development of welding machines and other

A. M. Candy

equipment and research and development work in improved welding practice, with particular reference to the application of welding to railroad requirements. Mr. Candy is a graduate of the University of Nebraska and has been associated with the Westinghouse Electric & Manufacturing Company for several years. In the Westinghouse engineering department he has been engaged in the solution of electrical problems involving motion picture projection, storage battery locomotives and arc welding. He has been associated with such developments as the first multiple story welded building, which was constructed in 1926 at the Westinghouse Works at Sharon, Pa., the first arc welded railroad bridge at Turtle Creek, Pa., and the construction of the Westinghouse engineering laboratory at East Pittsburgh, Pa.

OBITUARY

Loy S. Dromgold, part owner of Dromgold & Glenn, Chicago, died in that city on May 25, following a heart attack.

Russell Wallace, president of Crerar, Adams & Co., Chicago, died in that city on May 25, following a heart attack.

Equipment and Supplies

PASSENGER CARS

THE BOARD OF TRANSPORTATION, CITY OF NEW YORK, has opened bids for 250 steel passenger cars for subway service and 5 extra motor trucks and 5 extra trailer trucks, and has also opened separate bids for a lot of 500 cars and 10 extra motor trucks and 10 extra trailer trucks. The bids were as follows:

Company	250 Complete Cars, Each	5 Motor Trucks, Each	5 Trailer Trucks, Each
Pressed Steel	$37,540	$8,460	$2,035
American Car & Foundry	37,690	8,433	2,029
Pullman-Standard	37,765	8,445	2,038
Bethlehem Steel	38,900	8,995	2,150

Company	500 Complete Cars, Each	10 Motor Trucks, Each	10 Trailer Trucks, Each
Pullman-Standard	$37,740	$8,420	$2,011
American Car & Foundry	37,790	8,425	2,015
Bethlehem Steel	38,950	8,985	2,145
Pressed Steel	No bid	No bid	No bid

Inquiry for this equipment was reported in the *Railway Age* of May 4.

IRON AND STEEL

THE NEW YORK CENTRAL is inquiring for about 500 tons of steel for its main station at Syracuse, N. Y.

MOTOR VEHICLES

THE NEW ENGLAND TRANSPORTATION COMPANY has ordered three 40-passenger street-car type buses from the American Car & Foundry Motors Company.

MISCELLANEOUS

THE ATCHISON, TOPEKA & SANTA FE has placed an order with the Evans Products Company, Detroit, Mich., to equip 50 of its 50-ft. freight cars with new type Evans auto-loaders for loading dual-wheel and heavy duty motor trucks. The company's lighter model for passenger car and light truck shipment is already installed in more than 21,000 freight cars.

Financial

BALTIMORE & OHIO.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon that portion of its Grafton-Belington branch extending from a point near Park, W. Va., southward to Berryburg Junction, 20 miles; and to acquire and operate a line extending from Berryburg Junction northerly to a connection with its Parkersburg-Grafton branch, about 1.3 miles west of Grafton—the new line to be approximately 12.3 miles long. The new line is to be constructed for the B. & O. by the federal government in lieu of the line to be abandoned, the abandonment being made necessary by the construction of a dam in connection with the government's project of flood control for the Pittsburgh area and the canalization of the lower Monongahela river.

BANGOR & AROOSTOOK.—*Exchange Offer Extended.*—This company has extended its offer to exchange its 5 per cent extension bonds for a like amount of 4 per cent convertible consolidated refunding mortgage bonds. As of May 20, holders of $1,239,000 of a total of $1,700,000 of extension bonds had accepted the exchange offer. The extension bonds mature from 1937 to 1939, and the new issue matures in 1951.

CHICAGO GREAT WESTERN.—*Trackage Rights.*—The Interstate Commerce Commission has affirmed the decision of its Division 4 permitting this company to operate over 4,200 ft. of track of the Kansas City Southern in Kansas City, using the l.c.l. freight station of the K. C. S. The Brotherhood of Railway Clerks contested the finding of Division 4, contending, among other things, that the labor provisions of the Emergency Transportation Act applied. The I. C. C. found against this contention, holding that the Emergency Act deprived it of no jurisdiction under section 1(18) of the Interstate Commerce Act. Commissioners Porter and McManamy dissented, holding that provision should be made in the order to protect the employees. Commissioner Splawn dissented, holding that no certificate of convenience and necessity was needed for the proposed operation.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Reorganization Plan.*—An outline of a reorganization plan has been drawn up by directors of the Chicago, Milwaukee, St. Paul & Pacific and presented to large security holders for discussion. The plan provides:

(1) That the Chicago, Terre Haute & Southeastern first and refunding bonds remain undisturbed.

(2) That the $135,000,000 issue of general mortgage bonds maintain its mortgage position, but receive only two-thirds of its interest at a fixed rate and the remainder contingent upon earnings, but cumulative, this arrangement to continue for five years, after which all interest would become fixed.

(3) That the adjustment bonds and their

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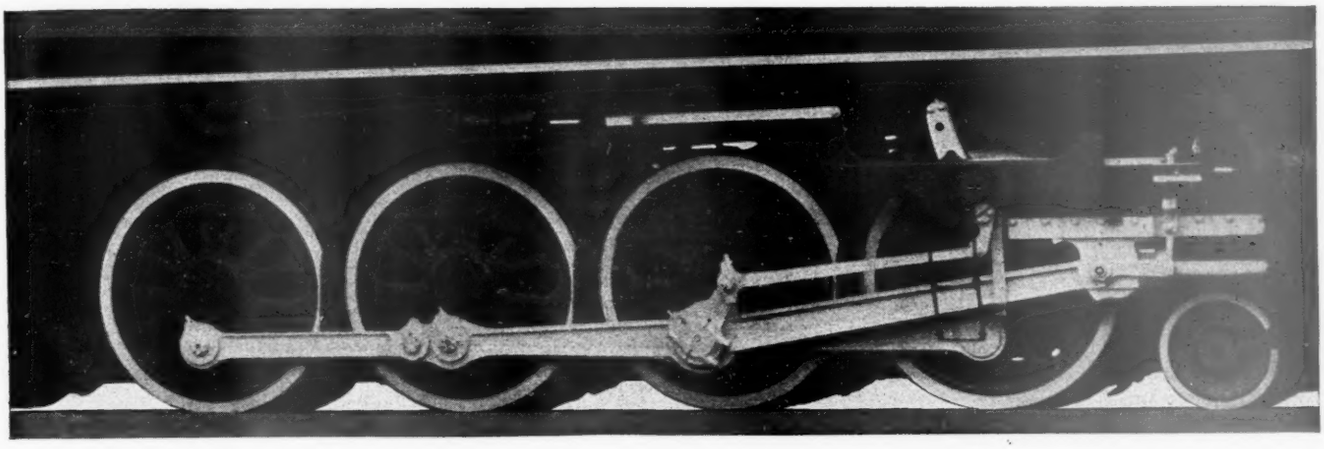
TOUGH STEELS FOR TOUGH JOBS



Higher boiler pressures, increased motive force and greater speed demand the toughest steel for safety. Piston rods, side rods, crank pins, axles and guides must be of alloy steel. Only in alloy steel can the utmost shock and fatigue resistance and toughness be obtained. But what is the best alloy steel to use?

Since 1906 Electromet has been developing and perfecting alloy steels. It has studied the fields of application for the many types of alloy steels. It has shown the way to use these steels correctly.

During this time Electromet has collected a vast amount of information on alloy steels. This is yours for the asking. It is not biased in favor of any one composition or producer. Electromet Engineers are glad to give you all the information you desire on the use of alloys and alloy steels.

ELECTRO METALLURGICAL COMPANY
Unit of Union Carbide and Carbon Corporation

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30 EAST 42nd STREET, NEW YORK, N. Y.

Electromet
Ferro-Alloys & Metals

back interest be replaced with new preferred stock.

(4) That present preferred and common stocks receive new common shares. One share of new common would be exchanged for each share of preferred stock now outstanding, but the par value would be trimmed from $100 to $25. One share of new common would be exchanged for each three shares of the old common stock.

(5) That the new preferred stock share in assets and dividends up to 5 per cent, after which the new common stock would share on a per share basis.

(6) That the maturity dates of equipment trust certificates be spread out. The tentative plan is to pay 20 per cent of the certificates at maturity and an additional 20 per cent each succeeding year until the obligations have been fulfilled.

The entire plan is tentative and so far has been presented only to large security holders, which comprise insurance companies and savings banks. It is hoped that a sufficiently large proportion of the holders of the senior liens will have agreed on a plan by July 1 and that a proposition can then be put forward.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a line extending from Stillwater Junction, Minn., to a point near Stillwater, 2.3 miles.

MAINE CENTRAL.—*Bonds.*—The Interstate Commerce Commission has authorized the Portland & Rumford Falls to issue $300,000 of 4 per cent debenture coupon bonds to be delivered to the Maine Central at par in reimbursement for expenditures made by it to pay maturing bonds of the subsidiary company. The Maine Central has been authorized to guarantee the new issue.

MERIDIAN & BIGBEE RIVER.—*R. F. C. Loan.*—The Interstate Commerce Commission has authorized a loan of $240,748 to the trustee of this company for construction and maintenance materials, trustees certificates to be issued for collateral.

MOBILE & OHIO.—*R. F. C. Loan.*—The receiver has applied to the Reconstruction Finance Corporation for a three-year extension of the loan for $877,599.

MONONGAHELA.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue $1,245,000 of capital stock to be delivered to the proprietary companies in payment for advances; and to issue and sell $12,000,000 of first mortgage, Series A, bonds, the proceeds to be used to retire $5,835,000 of outstanding bonds and to repay advances for capital purposes. The proprietary companies—the Pennsylvania, the Baltimore & Ohio and the Pittsburgh & Lake Erie—will guarantee the bond issue, for which a sinking fund is provided, and it will be sold to Kuhn, Loeb & Co., at 99¼, which will make the average annual cost to the railroad approximately 4.05 per cent. Commissioner Porter dissented because of the increase in funded debt involved, saying that "the financing here approved is exactly that which is in great degree responsible for the financial difficulties in which so many of our railroads now find themselves."

PITTSBURGH & WEST VIRGINIA.—*R.F.C. Loan.*—The Interstate Commerce Commission has authorized the extension for three years of a loan of $3,771,788 of this company which matured on May 28—with the provision that loans from the Pennroad Corporation and the New York banks to which this company is indebted in the amount of $2,662,500 shall be extended for a similar period of time. Commissioner Mahaffie dissented from the finding of the majority that the collateral pledged for these loans with the R.F.C. constitutes adequate security.

WESTERN PACIFIC.—*Not to Pay Interest.*—This company, it is reported, will not pay on June 1 interest on bonds due March 1 and which will be defaulted at the end of the 90 days' period of grace. A plan for reorganizing the capital structure of the company is in preparation.

Dividends Declared

Baltimore & Cumberland Valley Extension.—$1.75, semi-annually, payable July 1 to holders of record June 29.

Chesapeake & Ohio.—70c, quarterly, payable July 1 to holders of record June 7.

Reading.—2nd Preferred, 50c, quarterly, payable July 11 to holders of record June 20.

Average Prices of Stocks and of Bonds

	May 28	Last week	Last year
Average price of 20 representative railway stocks..	32.42	32.21	41.50
Average price of 20 representative railway bonds..	73.58	73.14	78.25

Railway Officers

FINANCIAL, LEGAL AND ACCOUNTING

G. Jefferies, freight claim agent on the Canadian Pacific, with headquarters at Montreal, Que., has been transferred to Vancouver, B. C., succeeding **F. K. Clarke,** who has in turn been transferred to Montreal.

TRAFFIC

W. L. McMorris, assistant passenger traffic manager of the Seaboard Air Line, with headquarters at Atlanta, Ga., has been given a leave of absence for one year because of ill health. **H. E. Pleasants,** division passenger agent at Raleigh, N. C., has been appointed assistant general passenger agent at Atlanta. **C. G. Ward** has been appointed division passenger agent at Raleigh, succeeding Mr. Pleasants. **H. T. Denning** has been appointed district passenger agent at Birmingham, Ala., succeeding **J. W. Jamison,** resigned.

Merle W. Dancy, traffic representative for the Missouri Pacific Lines at Los Angeles, Cal., who has been promoted to perishable traffic manager at St. Louis, Mo., as noted in the *Railway Age* of May 25, began his railway career in 1911, when he entered the service of the Chicago & Alton (now the Alton) as a passenger agent at Kansas City, Mo. Five years later Mr. Dancy was promoted to division passenger agent, with headquarters at

Merle W. Dancy

Springfield, Ill., later being transferred to St. Louis. In 1920, he was appointed general agent for the Alton at Peoria, Ill., being further advanced to assistant general freight and passenger agent at St. Louis in 1924. Five years later Mr. Dancy was promoted to executive general agent, with the same headquarters, holding this position until September, 1929, when he left railway service to accept a position as state manager for the Peoria Life Insurance Company with headquarters at Los Angeles. In February, 1934, Mr. Dancy re-entered railway service as a representative of the freight traffic department of the Missouri Pacific Lines at Los Angeles. He was holding this position at the time of his recent appointment as perishable traffic manager.

OPERATING

A. Gorman, agent on the Illinois Central at Mattoon, Ill., has been promoted to trainmaster of the Champaign district of the Illinois division, with headquarters at Champaign, Ill., succeeding **O. H. McFarlin,** who has been transferred to the Memphis division, with headquarters at Memphis, Tenn. Mr. McFarlin replaces **T. D. Beven,** who has been transferred to the newly-created position of trainmaster of the Paducah district, Paducah Terminal and East Cairo districts of the Kentucky division, with headquarters at Paducah, Ky.

ENGINEERING AND SIGNALING

A. E. Perlman, formerly a roadmaster on the Northern Pacific and more recently connected with the Reconstruction Finance Corporation, has been appointed to the newly-created position of assistant engineer maintenance of way of the Chicago, Burlington & Quincy, with headquarters at Chicago.

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from 145 Monthly Reports of Revenues and Expenses representing 149 Class I Steam Railways

FOR THE MONTH OF MARCH, 1935 AND 1934

Item	United States		Eastern District		Southern District		Western District	
	1935	1934	1935	1934	1935	1934	1935	1934
Average number of miles operated	238,009	239,247	59,012	59,087	45,259	45,450	133,738	134,710
Revenues:								
Freight	$228,603,298	$241,013,476	$101,427,778	$110,629,044	$48,231,499	$50,027,932	$78,944,021	$80,356,500
Passenger	c 27,736,579	e 27,440,067	16,071,758	16,529,691	4,461,858	4,231,972	7,202,963	6,678,404
Mail	7,780,705	7,871,997	2,988,086	3,081,914	1,382,841	1,380,120	3,409,778	3,409,963
Express	4,614,074	5,081,649	1,752,297	2,116,944	1,217,295	1,151,552	1,644,482	1,813,153
All other transportation	6,509,422	6,388,921	3,279,974	3,367,154	717,062	647,685	2,512,386	2,374,082
Incidental	5,084,903	4,858,084	2,738,457	2,654,226	883,843	827,590	1,462,603	1,376,268
Joint facility—Cr.	779,799	736,943	269,873	238,950	164,025	158,149	345,901	339,844
Joint facility—Dr.	210,221	190,537	53,757	50,937	16,265	16,585	140,199	123,015
Railway operating revenues	280,898,559	293,200,600	128,474,466	138,566,986	57,042,158	58,408,415	95,381,935	96,225,199
Expenses:								
Maintenance of way and structures	27,785,243	28,512,486	10,702,877	12,127,100	6,108,429	6,035,499	10,973,937	10,349,887
Maintenance of equipment*	56,884,273	57,556,955	26,216,067	27,029,626	10,930,658	10,778,807	19,737,548	19,748,522
Traffic	7,534,325	7,290,316	2,869,699	2,728,622	1,471,702	1,408,226	3,192,924	3,153,468
Transportation	103,511,375	101,642,426	48,291,438	49,619,416	18,089,649	17,332,906	37,130,288	34,690,104
Miscellaneous operations	2,435,036	2,196,706	1,122,501	1,097,789	386,274	335,328	926,261	763,589
General	a 15,307,332	b 12,253,392	6,472,798	5,384,711	2,427,913	2,088,961	6,406,621	4,779,720
Transportation for investment—Cr.	179,551	181,904	32,398	55,233	23,773	23,325	123,380	103,346
Railway operating expenses	213,278,033	209,270,377	95,642,982	97,932,031	39,390,852	37,956,402	78,244,199	73,381,944
Net revenue from railway operations	67,620,526	83,930,223	32,831,484	40,634,955	17,651,306	20,452,013	17,137,736	22,843,255
Railway tax accruals	20,203,273	21,467,162	8,076,175	8,829,006	4,468,947	4,481,995	7,658,151	8,156,161
Uncollectible railway revenues	87,920	77,872	26,690	33,702	12,394	16,819	48,836	27,351
Railway operating income	47,329,333	62,385,189	24,728,619	31,772,247	13,169,965	15,953,199	9,430,749	14,659,743
Equipment rents—Dr. balance	6,541,460	7,201,307	3,109,130	3,595,722	520,030	610,484	2,912,300	2,995,101
Joint facility rent—Dr. balance	2,936,909	2,966,802	1,670,732	1,666,416	345,917	369,585	920,260	930,801
Net railway operating income	37,850,964	52,217,080	19,948,757	26,510,109	12,304,018	14,973,130	5,598,189	10,733,841
Ratio of expenses to revenues (per cent)	75.93	71.37	74.45	70.67	69.06	64.98	82.03	76.26
* Includes:								
Depreciation	16,050,712	15,565,063	6,961,109	6,860,451	3,179,811	2,942,993	5,909,792	5,761,619
Retirements	130,036	465,805	51,530	89,669	36,517	101,393	41,989	274,743
Maintenance of equipment before depreciation and retirements	40,703,525	41,526,087	19,203,428	20,079,506	7,714,330	7,734,421	13,785,767	13,712,160
Net railway operating income before depreciation and retirements	54,031,712	68,247,948	26,961,396	33,460,299	15,520,346	18,017,516	11,549,970	16,770,203

FOR THREE MONTHS ENDED WITH MARCH, 1935 AND 1934

Average number of miles operated	238,092	239,392	59,014	59,140	45,266	45,474	133,812	134,778
Revenues:								
Freight	$645,638,320	$651,478,605	$291,303,282	$293,262,480	$133,033,274	$136,620,272	$221,301,764	$221,595,853
Passenger	c 85,450,412	c 80,016,147	50,272,950	48,720,882	13,242,546	11,925,849	21,934,916	19,369,416
Mail	22,412,365	22,702,081	8,566,496	8,825,778	4,003,464	4,001,028	9,842,405	9,875,275
Express	10,902,768	11,812,369	3,933,978	4,724,561	2,958,519	2,938,928	4,010,271	4,148,880
All other transportation	18,676,452	17,796,377	9,583,083	9,459,070	1,954,939	1,775,365	7,138,430	6,561,942
Incidental	15,264,732	14,269,627	8,398,469	7,881,908	2,567,051	2,313,338	4,299,212	4,074,381
Joint facility—Cr.	2,347,169	2,149,410	773,979	702,945	471,690	459,627	1,101,500	986,838
Joint facility—Dr.	635,097	552,259	188,680	152,311	49,939	47,916	396,478	352,032
Railway operating revenues	800,057,121	799,672,357	372,643,557	373,425,313	158,181,544	159,986,491	269,232,020	266,260,553
Expenses:								
Maintenance of way and structures	81,023,401	78,802,351	32,572,521	33,159,016	17,941,962	16,936,685	30,508,918	28,706,650
Maintenance of equipment†	165,144,197	160,785,845	75,193,242	74,551,960	31,675,487	30,192,115	58,275,468	56,041,770
Traffic	22,449,994	21,678,711	8,454,070	8,182,820	4,508,922	4,237,240	9,487,002	9,258,651
Transportation	305,486,840	289,996,341	143,905,558	140,476,675	52,170,497	49,012,609	109,410,785	100,507,057
Miscellaneous operations	7,313,977	6,490,058	3,522,736	3,271,506	1,095,013	922,485	2,696,288	2,296,067
General	e 45,468,486	f 36,449,854	19,298,376	15,992,444	7,182,741	6,172,310	18,987,729	14,285,100
Transportation for investment—Cr.	528,894	460,775	104,374	126,397	71,656	47,135	352,864	287,243
Railway operating expenses	626,358,361	593,742,385	282,842,129	275,508,024	114,502,966	107,426,309	229,013,266	210,808,052
Net revenue from railway operations	173,698,760	205,929,972	89,801,428	97,917,289	43,678,578	52,560,182	40,218,754	55,452,501
Railway tax accruals	60,028,779	62,537,110	24,158,087	25,244,040	12,945,875	12,963,699	22,924,817	24,329,371
Uncollectible railway revenues	233,590	269,808	87,304	132,118	36,620	57,465	109,666	80,225
Railway operating income	113,436,391	143,123,054	65,556,037	72,541,131	30,696,083	39,539,018	17,184,271	31,042,905
Equipment rents—Dr. balance	19,885,417	21,495,700	10,052,603	10,598,132	957,163	1,828,169	8,875,651	9,069,399
Joint facility rent—Dr. balance	8,777,412	8,931,220	5,051,096	4,954,731	876,493	1,068,592	2,849,823	2,907,897
Net railway operating income	84,773,562	112,696,134	50,452,338	56,988,268	28,862,427	36,642,257	5,458,797	19,065,609
Ratio of expenses to revenues (per cent)	78.29	74.25	75.90	73.78	72.39	67.15	85.06	79.17
† Includes:								
Depreciation	48,000,463	46,564,002	20,733,988	20,444,214	9,500,623	8,821,844	17,765,852	17,297,944
Retirements	287,580	1,058,048	109,036	304,797	80,390	310,845	98,154	442,406
Maintenance of equipment before depreciation and retirements	116,856,154	113,163,795	54,350,218	53,802,949	22,094,474	21,059,426	40,411,462	38,301,420
Net railway operating income before depreciation and retirements	133,061,605	160,318,184	71,295,362	77,737,279	38,443,440	45,774,946	23,322,803	36,805,959

a Includes accruals on account of pensions, as follows: Under Federal Retirement Act, $2,747,847; under previously existing plan, $2,928,395, but excludes pension accruals held in suspense and not charged to operating expenses.
b Includes accruals on account of pensions, under previously existing plan, $2,886,184.
c Includes $2,380,326 sleeping and parlor car surcharge.
d Deficit or other reverse items.
e Includes accruals on account of pensions, as follows: Under Federal Retirement Act, $8,131,215; under previously existing plan, $8,730,511, but excludes pension accruals held in suspense and not charged to operating expenses.
f Includes accruals on account of pensions, under previously existing plan, $8,698,326.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of March,

Region, road, and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross Excluding locomotives and tenders	Ton-miles (thousands): Net Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany.....1935	402	125,666	130,420	8,816	3,084	69.3	159,877	54,981	54	41	43.8	11
1934	402	153,605	158,993	10,354	3,612	65.5	191,633	65,415	65	38	36.5	11
Boston & Maine.....1935	2,016	283,833	316,999	29,560	9,297	68.6	503,825	182,803	98	122	55.6	2
1934	2,022	300,026	343,335	33,706	10,115	64.7	579,366	213,647	141	142	50.1	17
N. Y., New H. & Hartf.....1935	2,045	336,639	411,011	19,156	11,015	66.1	594,724	214,889	195	109	35.8	22
1934	2,044	417,377	507,029	31,984	12,540	60.4	736,420	269,212	194	160	45.2	..
Great Lakes Region:												
Delaware & Hudson.....1935	835	209,222	286,093	32,694	7,151	62.4	452,142	208,663	240	36	13.0	146
1934	848	245,160	338,442	45,144	8,011	58.9	531,833	245,476	237	33	12.1	117
Del., Lack. & Western.... 1935	992	348,118	389,536	47,879	11,447	66.9	660,358	258,697	178	83	31.7	51
1934	992	394,998	438,251	54,654	12,203	63.6	735,311	291,193	182	75	29.1	30
Erie (incl. Chi. & Erie)....1935	2,305	658,132	689,634	41,041	27,541	63.6	1,685,621	644,855	298	178	37.5	88
1934	2,315	772,472	811,317	65,649	30,166	61.1	1,905,178	731,756	312	178	36.4	51
Grand Trunk Western.....1935	1,007	247,775	250,684	3,268	6,717	59.8	409,535	137,465	70	70	49.7	..
1934	1,008	262,366	265,896	3,296	6,758	60.2	413,200	141,557	68	82	55.0	..
Lehigh Valley 1935	1,335	384,781	408,964	36,031	11,753	63.1	720,883	272,801	169	139	45.1	13
1934	1,335	443,449	468,298	43,522	13,006	61.8	817,381	328,672	175	140	44.5	7
Michigan Central 1935	1,971	447,431	449,445	25,452	15,201	59.9	906,735	285,114	131	46	26.1	13
1934	1,967	469,558	471,841	19,816	15,507	59.6	922,884	299,841	133	49	26.9	14
New York Central.....1935	6,385	1,534,565	1,640,102	123,899	54,950	60.9	3,585,125	1,534,108	535	443	45.3	23
1934	6,418	1,667,170	1,801,013	131,531	59,298	57.8	3,991,561	1,680,812	567	491	46.4	11
New York, Chi. & St. L.....1935	1,661	448,005	450,426	4,976	15,451	62.5	951,439	368,122	134	35	20.9	37
1934	1,661	541,003	544,108	6,508	16,083	60.4	986,484	355,794	128	49	27.4	12
Pere Marquette 1935	2,096	365,549	384,804	4,679	9,355	59.3	603,230	226,043	108	42	28.3	2
1934	2,119	406,871	426,201	4,917	9,897	57.7	655,696	247,385	114	39	25.3	6
Pitts. & Lake Erie.....1935	234	75,834	78,130	64	3,073	56.8	262,339	142,400	32	39	55.0	6
1934	234	80,645	82,682	954	3,342	55.3	292,396	159,606	31	38	55.0	2
Wabash 1935	2,435	606,200	617,310	11,846	18,414	61.2	1,089,315	360,639	154	179	53.8	22
1934	2,445	600,672	609,857	11,803	18,078	60.8	1,083,393	352,392	170	176	50.8	52
Central Eastern Region:												
Baltimore & Ohio.....1935	6,321	1,400,563	1,716,478	196,430	42,487	61.0	2,936,148	1,337,430	735	570	43.7	114
1934	6,263	1,500,143	1,853,385	219,954	43,667	58.9	3,088,749	1,394,031	715	614	46.2	26
Big Four Lines.....1935	2,711	629,868	646,255	28,216	18,937	61.0	1,251,019	565,195	201	149	42.6	10
1934	2,655	643,578	666,400	29,120	19,004	60.0	1,255,216	560,955	221	144	39.5	8
Central of New Jersey....1935	684	134,379	150,449	29,713	4,513	58.5	312,447	144,715	70	88	55.6	15
1934	690	159,115	178,821	36,516	5,198	55.1	382,946	180,577	85	87	50.5	19
Chicago & Eastern Ill.....1935	939	177,215	178,443	2,831	4,331	61.2	293,256	127,264	49	58	54.5	4
1934	939	185,582	186,230	3,130	4,230	59.2	291,600	123,915	57	113	66.2	6
Elgin, Joliet & Eastern...1935	446	94,569	96,006	726	2,286	58.8	184,195	91,379	57	30	34.9	7
1934	446	88,790	91,206	1,553	2,076	58.2	165,945	80,689	64	25	28.7	11
Long Island 1935	393	31,693	32,786	13,848	317	54.0	23,219	8,944	37	22	37.5	..
1934	396	42,252	43,243	17,845	404	50.5	31,774	12,576	41	22	35.3	..
Pennsylvania System 1935	10,009	2,808,866	3,160,716	354,966	98,092	61.0	6,745,787	3,036,767	1,374	1,056	43.5	161
1934	10,088	2,957,948	3,327,419	369,758	98,398	59.5	6,862,432	3,049,427	1,461	962	39.7	262
Reading 1935	1,452	391,865	427,101	49,916	11,624	59.4	844,770	401,511	267	101	27.5	82
1934	1,454	481,290	529,181	59,073	13,151	56.2	1,009,324	483,070	251	135	34.9	47
Pocahontas Region:												
Chesapeake & Ohio 1935	3,057	841,798	892,311	40,376	37,143	55.9	3,166,451	1,717,583	413	98	19.3	89
1934	3,106	880,695	937,121	42,448	37,628	54.6	3,202,297	1,704,155	459	107	18.9	125
Norfolk & Western.....1935	2,146	645,720	682,800	34,146	25,785	58.6	2,161,718	1,136,990	341	36	9.5	97
1934	2,164	645,495	687,465	37,851	25,768	59.2	2,127,459	1,128,430	420	52	11.0	171
Southern Region:												
Atlantic Coast Line.....1935	5,148	603,709	606,727	8,966	13,641	59.3	753,947	251,644	309	124	28.6	44
1934	5,145	649,112	653,510	8,811	13,571	57.4	763,334	245,719	333	138	29.2	73
Central of Georgia.....1935	1,886	232,665	234,158	3,512	5,332	71.2	287,916	110,897	97	43	30.9	..
1934	1,886	234,254	235,330	4,538	5,212	68.3	284,267	106,207	97	44	31.6	..
Illinois Central (incl. Y. & 1935	6,587	1,461,831	1,469,053	28,627	35,661	62.7	2,336,315	995,458	598	328	35.4	4
M. V.) 1934	6,618	1,425,713	1,440,272	28,204	32,816	59.7	2,175,965	879,141	612	313	33.9	2
Louisville & Nashville.....1935	5,049	1,001,702	1,082,294	28,314	22,780	60.6	1,591,047	766,951	321	257	44.5	8
1934	5,067	1,041,008	1,123,693	32,505	23,449	59.3	1,637,001	775,769	322	298	48.1	1
Seaboard Air Line.....1935	4,295	506,973	520,546	3,455	12,660	64.4	725,846	248,900	180	94	34.3	8
1934	4,298	524,822	544,089	3,178	12,944	62.8	759,491	259,134	208	79	27.5	2
Southern 1935	6,599	1,158,551	1,177,113	21,056	26,836	65.7	1,509,199	585,016	555	291	34.4	89
1934	6,599	1,241,580	1,259,696	21,714	28,013	64.6	1,593,047	610,664	619	289	31.8	120
Northwestern Region:												
Chi. & North Western.....1935	8,428	894,404	939,259	23,472	22,836	63.8	1,397,270	490,974	509	271	34.8	107
1934	8,443	980,835	1,030,717	22,194	24,413	62.8	1,472,026	536,187	574	241	29.6	145
Chicago Great Western.....1935	1,456	230,617	230,844	4,255	6,539	59.1	411,132	143,547	62	40	39.1	4
1934	1,463	229,333	229,602	14,449	6,884	59.9	422,728	144,898	65	35	35.3	1
Chi., Milw., St. P. & Pac...1935	11,120	1,207,498	1,269,762	58,917	31,866	60.5	2,022,603	800,819	488	207	29.8	105
1934	11,157	1,168,570	1,236,505	56,733	30,328	60.6	1,917,461	754,363	546	327	37.4	182
Chi., St. P., Minneap. & Om.1935	1,644	189,636	196,390	9,282	4,099	64.8	244,869	89,888	109	49	30.9	51
1934	1,653	207,935	214,939	9,603	4,609	66.1	268,648	104,972	126	28	18.1	62
Great Northern 1935	8,257	672,284	679,275	24,536	20,683	64.7	1,263,057	498,162	422	183	30.3	87
1934	8,335	597,945	603,207	18,606	17,834	68.2	1,061,989	444,067	432	172	28.5	117
Minneap., St. P. & S. St. M..1935	4,274	339,857	344,341	2,937	7,090	63.7	403,801	153,540	113	39	25.5	..
1934	4,281	336,157	341,752	3,143	7,202	66.5	407,443	163,319	118	47	28.6	8
Northern Pacific 1935	6,416	569,083	628,010	47,061	18,137	68.7	1,039,054	424,901	340	107	24.0	20
1934	6,410	503,976	549,153	37,458	15,773	71.3	888,189	378,553	349	163	31.8	60
Oreg.-Wash. R. R. & Nav...1935	2,125	170,901	180,335	12,650	4,544	69.3	262,002	104,571	95	41	30.3	24
1934	2,112	143,360	148,634	8,681	3,860	67.2	222,223	87,214	77	45	36.9	18
Central Western Region:												
Alton 1935	921	192,874	196,860	2,311	3,985	56.4	274,644	92,446	47	44	48.2	2
1934	923	198,581	202,220	1,171	3,840	61.1	239,417	81,684	43	52	55.1	..
Atch., Top. & S. Fe (incl. 1935	13,307	1,562,666	1,644,917	60,044	43,028	63.6	2,579,851	849,877	625	377	37.6	149
G.C. & S.F. & P. & S.F.).1934	13,334	1,517,783	1,589,053	57,314	41,848	64.7	2,450,256	815,489	687	362	34.6	215
Chi., Burl. & Quincy.....1935	8,971	1,194,325	1,248,490	38,301	31,105	61.2	1,857,026	767,555	455	120	20.9	5
1934	9,096	1,147,789	1,203,195	39,223	30,585	61.9	1,822,348	762,328	448	122	21.4	1
Chi., Rock I. & Pac. (incl. 1935	8,298	1,079,143	1,101,009	4,370	24,079	59.1	1,484,692	505,051	362	255	41.4	30
Chi., Rock I. & Gulf)...1934	8,334	1,043,357	1,064,313	7,090	23,122	59.3	1,431,195	496,078	455	149	24.7	114
Denver & R. G. Western..1935	2,602	202,718	220,882	22,330	5,429	63.8	334,022	135,027	160	54	25.3	15
1934	2,469	198,658	218,626	23,369	5,992	66.2	354,847	139,234	178	50	21.9	42
Los Angeles & Salt Lake...1935	1,225	171,412	195,097	28,605	5,509	68.5	307,599	112,688	78	20	20.5	9
1934	1,232	156,672	176,580	21,719	4,580	66.6	271,459	102,711	70	27	27.6	8
Oregon Short Line.....1935	2,478	283,217	299,301	22,140	8,145	63.2	503,384	192,310	124	47	27.7	30
1934	2,461	234,926	245,290	17,111	6,383	65.7	373,341	136,663	122	57	32.1	31
Southern Pacific—Pacific 1935	8,592	1,095,417	1,180,949	124,292	36,083	62.3	2,230,140	732,946	526	273	34.2	164
Lines 1934	8,683	995,820	1,066,412	113,091	31,566	61.1	1,964,311	625,922	519	349	40.2	177
Union Pacific 1935	3,590	905,153	925,788	38,919	29,995	64.9	1,769,708	637,455	298	108	26.7	70
1934	3,768	830,599	852,178	35,097	29,382	63.0	1,740,416	595,864	309	128	29.3	93
Southwestern Region:												
Mo.-Kans.-Texas Lines.....1935	3,282	345,775	348,393	4,927	8,978	59.7	550,386	184,293	113	80	41.4	30
1934	3,282	369,312	372,158	5,569	9,411	58.7	571,020	189,075	154	77	33.1	67
Missouri Pacific 1935	7,208	1,084,958	1,118,878	25,190	29,322	63.3	1,832,936	714,088	374	176	32.0	107
1934	7,333	1,151,700	1,191,700	26,964	31,969	61.5	1,995,657	716,900	398	158	28.4	104
St. Louis-San Francisco....1935	4,993	626,273	631,601	8,893	13,353	61.7	810,215	306,811	373	81	17.8	137
1934	5,152	636,074	641,511	7,196	13,999	60.3	863,103	328,475	390	83	17.5	149
St. Louis Southwestern 1935	1,774	267,484	270,903	3,581	6,794	60.4	404,135	129,372	91	27	22.9	13
Lines 1934	1,872	242,075	245,978	3,242	6,137	59.4	382,300	116,890	93	42	30.9	7
Texas & New Orleans.....1935	4,429	512,757	512,974	5,227	12,161	62.3	741,466	261,662	240	61	20.2	66
1934	4,464	497,603	498,084	6,679	11,273	63.7	669,863	232,977	221	82	27.1	49
Texas & Pacific.....1935	1,945	259,800	259,800	1,730	7,720	58.9	483,278	155,913	151	68	31.2	73
1934	1,946	253,046	253,046	1,496	7,564	60.3	466,921	153,246	165	72	30.2	96

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

1935, Compared with March, 1934, for Roads with Annual Operating Revenues Above $25,000,000

Region, road, and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany 1935	2,832	3,747	6,579	25.9	21,567	1,272	438	17.8	270	21.8	4,415	164	47.1
1934	3,099	3,684	6,783	24.4	21,054	1,248	426	18.1	311	26.2	5,253	164	53.3
Boston & Maine 1935	8,631	6,735	15,366	14.7	25,384	1,775	644	19.7	384	28.5	2,926	111	50.8
1934	8,319	7,944	16,263	15.3	26,016	1,931	712	21.1	424	31.0	3,409	113	42.9
N. Y., New H. & Hartf. 1935	14,672	10,273	24,945	15.3	25,846	1,767	638	19.5	278	21.5	3,390	110	45.6
1934	14,323	13,401	27,724	11.9	25,047	1.764	645	21.5	313	24.2	4,248	122	49.2
Great Lakes Region:													
Delaware & Hudson 1935	11,929	2,969	14,898	3.8	29,874	2,161	997	29.2	452	24.8	8,058	114	37.3
1934	10,001	3,319	13,320	4.2	27,631	2,169	1,001	30.6	594	32.9	9,335	123	45.8
Del., Lack. & Western 1935	16,683	4,689	21,372	12.2	31,821	1,897	743	22.6	390	25.8	8,414	139	54.1
1934	15,479	5,826	21,305	11.5	26,939	1,862	737	23.9	441	29.0	9,471	165	61.9
Erie (incl. Chi. & Erie) 1935	24,196	12,977	37,173	6.8	42,596	2,561	980	23.4	560	37.6	9,025	101	49.5
1934	29,420	15,817	45,237	5.3	39,409	2,466	947	24.3	522	35.2	10,195	112	57.7
Grand Trunk Western 1935	4,273	8,219	12,492	16.4	30,985	1,653	555	20.5	355	29.0	4,405	109	58.4
1934	4,611	10,157	14,768	19.8	29,127	1,575	540	20.9	309	24.5	4,529	111	58.1
Lehigh Valley 1935	14,270	5,507	19,777	9.5	34,615	1,873	709	23.2	445	30.4	6,590	141	46.6
1934	17,702	7,321	25,023	19.7	31,496	1,843	741	25.3	424	27.1	7,943	152	52.4
Michigan Central 1935	16,238	22,116	38,354	11.2	37,026	2,027	637	18.8	240	21.3	4,666	111	86.7
1934	20,376	23,099	43,475	9.0	35,264	1,965	639	19.3	222	19.3	4,917	115	87.1
New York Central 1935	48,931	59,094	108,025	22.3	37,807	2,336	1,000	27.9	458	26.9	7,751	103	58.2
1934	58,969	61,432	120,401	21.5	36,133	2,394	1,908	28.3	450	27.5	8,449	108	58.9
New York, Chi. & St. L. 1935	8,977	7,152	16,129	3.5	37,022	2,124	822	23.8	736	49.4	7,151	94	86.9
1934	8,316	7,940	16,256	4.1	31,616	1,823	658	22.1	706	52.9	6,911	109	100.5
Pere Marquette 1935	10,681	6,191	16,872	3.0	28,016	1,650	618	24.2	432	30.2	3,479	100	83.6
1934	11,311	6,509	17,820	2.5	26,482	1,612	608	25.0	448	31.0	3,766	106	91.2
Pitts. & Lake Erie 1935	14,992	9,324	24,316	43.0	48,880	3,459	1,878	46.3	189	7.2	19,657	101	35.3
1934	16,650	9,753	26,403	31.8	48,218	3,626	1,979	47.8	195	7.4	22,033	106	38.9
Wabash 1935	12,288	9,349	21,637	2.7	37,132	1,797	595	19.6	538	44.8	4,779	118	61.0
1934	13,556	9,426	22,981	4.8	36,388	1,804	587	19.5	495	41.7	4,650	123	58.0
Central Eastern Region:													
Baltimore & Ohio 1935	75,627	20,812	96,439	17.8	27,179	2,096	955	31.5	447	23.3	6,826	151	47.3
1934	78,557	21,737	100,294	18.2	25,340	2,059	929	31.9	448	23.8	7,180	166	50.3
Big Four Lines 1935	13,615	23,197	36,812	13.1	34,260	1,986	897	29.8	495	27.2	6,726	116	62.2
1934	17,884	23,386	41,270	16.9	32,634	1,950	872	29.5	438	24.8	6,816	123	61.5
Central of New Jersey 1935	12,784	7,909	20,693	27.4	28,879	2,325	1,077	32.1	226	12.0	6,825	146	36.8
1934	16,367	8,867	25,234	32.1	27,624	2,407	1,135	34.7	231	12.1	8,443	156	40.4
Chicago & Eastern Ill. 1935	3,426	2,826	6,252	8.3	29,130	1,655	718	29.4	657	36.5	4,372	125	54.8
1934	5,578	2,637	8,215	25.1	26,728	1,571	668	29.3	487	28.0	4,257	134	36.0
Elgin, Joliet & Eastern 1935	8,165	3,251	11,416	7.3	17,786	1,948	966	40.0	258	11.0	6,607	118	35.9
1934	9,182	3,968	13,150	23.5	16,258	1,869	909	38.9	198	8.7	5,836	136	33.6
Long Island 1935	772	3,024	3,796	4.2	5,777	733	282	28.2	76	5.0	735	322	25.4
1934	766	4,188	4,954	1.2	5,845	752	298	31.1	82	5.2	1,024	319	31.1
Pennsylvania System 1935	237,437	45,535	282,972	14.6	34,463	2,402	1,081	31.0	346	18.3	9,787	125	46.7
1934	242,242	49,733	291,975	12.4	32,001	2,320	1,031	31.0	337	18.3	9,751	133	49.2
Reading 1935	33,231	9,633	42,864	7.0	28,355	2,156	1,025	34.5	302	14.7	8,920	143	41.8
1934	33,031	9,196	42,227	18.2	24,250	2,097	1,004	36.7	369	17.9	10,720	154	49.1
Pocahontas Region:													
Chesapeake & Ohio 1935	42.001	9,710	51,711	2.1	52,641	3,762	2,040	46.2	1,071	41.4	18,123	79	58.9
1934	40,838	9,096	49,934	1.9	48,853	3,636	1,935	45.3	1,101	44.5	17,699	84	55.8
Norfolk & Western 1935	32,681	4,157	36,838	2.7	49,586	3,348	1,761	44.1	996	38.5	17,090	104	61.5
1934	35,559	4,262	39,821	3.6	48,335	3,296	1,748	43.8	914	35.3	16,821	112	49.5
Southern Region:													
Atlantic Coast Line 1935	23,867	7,762	31,629	17.8	21,029	1,249	417	18.4	257	23.5	1,577	111	45.9
1934	26,658	7,004	33,662	25.7	20,264	1,176	379	18.1	235	22.7	1,541	122	45.4
Central of Georgia 1935	6,324	2,789	9,113	24.5	22,340	1,237	477	20.8	393	26.5	1,897	130	54.8
1934	6,925	3,188	10,113	23.4	21,386	1,213	453	20.4	339	24.4	1,817	136	54.9
Illinois Central (incl. Y. & M. V.) 1935	43,534	15,078	58,612	33.8	26,863	1,598	681	27.9	548	31.3	4,875	132	52.2
1934	52,518	14,260	66,778	39.4	25,528	1,526	617	26.8	425	26.6	4,285	147	51.2
Louisville & Nashville 1935	44,464	7,419	51,883	32.0	24,433	1,588	766	33.7	477	23.4	4,900	142	62.0
1934	46,940	7,383	54,323	30.5	23,686	1,573	745	33.1	461	23.5	4,939	144	60.2
Seaboard Air Line 1935	11,011	6,199	17,210	3.7	23,345	1,432	491	19.7	467	36.9	1,869	123	61.6
1934	11,965	6,478	18,443	5.6	22,734	1,447	494	20.0	453	36.0	1,945	126	61.5
Southern 1935	27,682	15,955	43,637	14.9	21,318	1,303	505	21.8	432	30.2	2,860	152	45.7
1934	31,278	16,220	47,498	17.8	20,682	1,283	492	21.8	415	29.5	2,985	160	45.5
Northwestern Region:													
Chi. & North Western 1935	40,435	20,489	60,924	8.0	23,716	1,562	549	21.5	260	19.0	1,879	133	39.8
1934	42,559	17,551	60,110	10.9	23,290	1,501	547	22.0	288	20.9	2,049	139	41.6
Chicago Great Western 1935	2,630	2,961	5,591	4.7	32,999	1,783	622	22.0	828	63.9	3,180	134	74.4
1934	2,547	2,817	5,364	3.7	33,153	1,843	632	21.1	871	69.1	3,195	147	78.8
Chi., Milw., St. P. & Pac. 1935	50,800	15,522	66,322	2.8	26,571	1,675	663	25.1	390	25.6	2,323	127	61.6
1934	55,545	14,173	69,718	5.2	25,305	1,641	646	24.9	349	23.1	2,181	131	47.8
Chi., St. P., Minneap. & Om. 1935	2,095	6,845	8,940	11.3	18,315	1,291	474	21.9	324	22.8	1,764	127	42.0
1934	2,123	6,590	8,713	12.3	19,129	1,292	505	22.8	389	25.8	2,049	123	46.9
Great Northern 1935	42,191	8,956	51,147	8.3	28,482	1,879	741	24.1	314	20.2	1,946	134	37.6
1934	42,531	8,710	51,241	7.3	26,231	1,776	743	24.9	280	16.5	1,719	135	33.2
Minneap., St. P. & S. St. M. 1935	13,917	3,359	17,276	6.2	18,830	1,188	452	21.7	287	20.8	1,159	119	73.7
1934	16,213	3,129	19,342	5.6	18,883	1,212	486	22.7	273	18.1	1,231	120	67.4
Northern Pacific 1935	34,016	4,198	38,214	11.5	27,777	1,826	747	23.4	359	22.3	2,136	160	48.7
1934	40,739	3,856	44,595	13.0	26,449	1,762	751	24.0	274	16.0	1,905	154	37.0
Oreg.-Wash. R. R. & Nav. 1935	7,235	1,785	9,020	9.0	24,998	1,533	612	23.0	374	23.4	1,587	155	45.7
1934	8,735	1,819	10,554	4.6	24,585	1,550	608	22.6	267	17.6	1,332	137	41.8
Central Western Region:													
Alton 1935	3,269	5,935	9,204	28.2	31,678	1,424	479	23.2	324	24.7	3,237	121	70.6
1934	3,063	5,640	8,703	24.0	25,939	1,206	411	21.3	303	23.3	2,856	145	69.1
Atch., Top. & S. Fe (incl. G.C. & S.F. & P. & S.F.) 1935	75,536	10,079	85,615	13.5	31,134	1,651	544	19.8	320	25.5	2,060	128	54.9
1934	78,357	9,942	88,299	11.3	30,093	1,614	537	19.5	298	23.6	1,973	116	50.6
Chi., Burl. & Quincy 1935	33,189	11,991	45,180	9.2	27,922	1,555	643	24.7	548	36.3	2,760	128	72.2
1934	37,145	12,378	49,523	10.4	27,652	1,588	664	24.9	497	32.2	2,704	128	70.4
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf) 1935	31,454	11,253	42,707	21.0	24,126	1,376	468	21.0	381	30.8	1,963	143	57.8
1934	33,835	10,271	44,106	23.6	23,718	1,372	475	21.5	363	28.5	1,920	150	57.2
Denver & R. G. Western 1935	12,922	2,440	15,362	5.8	25,702	1,648	666	24.9	284	17.9	1,674	163	36.7
1934	13,984	2,368	16,352	4.9	27,296	1,786	701	23.2	275	17.9	1,819	163	34.2
Los Angeles & Salt Lake 1935	4,860	1,205	6,065	10.1	31,285	1,795	657	20.5	599	42.8	2,967	144	73.2
1934	4,929	940	5,869	10.2	29,840	1,733	656	22.4	565	37.8	2,690	138	66.6
Oregon Short Line 1935	8,886	4,359	13,245	22.7	30,418	1,777	679	23.6	468	31.4	2,503	123	60.8
1934	9,105	4,272	13,377	15.8	27,192	1,589	582	21.4	330	23.4	1,791	117	47.3
Southern Pacific—Pacific Lines 1935	34,378	23,677	58,055	9.1	33,154	2,036	669	20.3	407	32.2	2,752	109	52.7
1934	37,020	21,044	58,064	9.3	31,374	1,973	629	19.8	348	28.7	2,325	105	43.8
Union Pacific 1935	23,926	8,030	31,956	18.7	47,645	1,955	704	21.3	643	46.6	5,729	121	76.6
1934	23,231	7,865	31,096	21.4	48,450	2,095	717	20.3	618	48.4	5,101	117	65.5
Southwestern Region:													
Mo.-Kans.-Texas Lines 1935	5.706	2,991	8,697	3.4	29,129	1,592	533	20.5	684	55.8	1,812	93	59.0
1934	8,995	2,866	11,861	3.9	27,736	1,546	512	20.1	514	43.6	1,859	99	52.9
Missouri Pacific 1935	18,803	17,329	36,132	3.6	30,495	1,689	658	24.4	638	41.2	3,196	128	67.1
1934	20,842	18,150	38,992	5.6	31,253	1,733	622	22.4	593	43.0	3,154	130	70.7
St. Louis-San Francisco 1935	21,544	4,655	26,199	7.9	23,784	1,294	490	23.0	378	26.6	1,982	139	45.5
1934	22,065	4,745	26,810	6.6	23,680	1,357	516	23.5	395	27.9	2,057	144	44.2
St. Louis Southwestern Lines 1935	3,525	2,978	6,503	7.4	28,778	1,511	484	19.0	642	55.8	2,353	99	75.2
1934	4,639	2,942	7,581	9.1	28,137	1,579	483	19.0	497	43.9	2,014	101	59.5
Texas & New Orleans 1935	7,383	10,729	18,112	7.6	26,059	1,446	510	21.5	466	34.7	1,906	92	55.6
1934	7,871	10,294	18,165	5.8	23,353	1,346	468	20.7	414	31.4	1,684	96	53.7
Texas & Pacific 1935	3,029	4,033	7,062	5.7	30,912	1,860	600	20.2	712	59.9	2,585	88	38.5
1934	3,573	4,606	8,179	7.1	27,973	1,845	606	20.3	604	49.5	2,541	90	34.7

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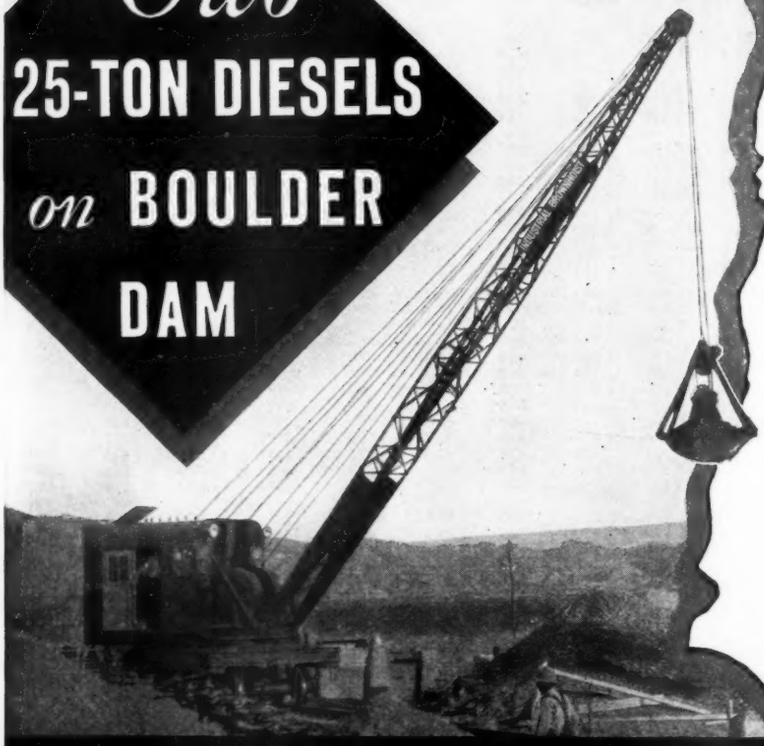

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